

AD-A046 800

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ENVIRONMENTAL POLLUTION: NOISE POLLUTION-AIRPLANE NOISE.(U)  
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1 OF 5  
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A046 800





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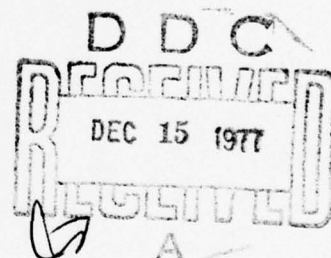
**ENVIRONMENTAL POLLUTION:  
NOISE POLLUTION - AIRPLANE NOISE**

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Alexandria, Va. 22314**

**NOVEMBER 1977**

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**Alexandria, Va. 22314**

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DDC/BIB-77/11	2. GOVT ACCESSION NO. AD-A046 800	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle)  ENVIRONMENTAL POLLUTION: NOISE POLLUTION - AIRPLANE NOISE		5. TYPE OF REPORT & PERIOD COVERED Bibliography Aug 1947 - Feb 1977
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Defense Documentation Center Cameron Station Alexandria, Virginia		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS  65801S
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE November 1977
		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)  UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES  Supersedes AD-724 850		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
*Bibliographies	Urban Areas	Cockpits
*Aircraft Noise	Airports	Speech
*Noise Pollution	Hearing	Impulse Noise
Jet Plane Noise	Propeller Noise	Military Aircraft
Jet Engine Noise	Commercial Aircraft	Aircraft Engine Noise
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
This bibliography is an unclassified compilation of citations on Noise Pollution - Airplane Noise. These citations deal primarily with measuring and assessing the effects of noise exposure on hearing, speech, communications and community/airport noise. Reports pertaining to sonic boom specifically have been omitted. Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided.		

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## F O R E W O R D

This unclassified and unlimited bibliography contains 308 citations of reports on *Environmental Pollution: Noise Pollution-Airplane Noise*.

Citations were taken from entries processed into the Defense Documentation Center's data bank during the period of January 1953 to February 1977.

This report supersedes DDC report bibliography on *Environmental Pollution: Noise Pollution - Airplane Noise*, AD-724 850, DDC-TAS-71-26-1, dated June 1971.

Individual entries are arranged in AD number sequence under the heading AD Bibliographic References. Computer generated indexes of Corporate Author-Monitoring Agency, Subject, Title and Personal Author are provided.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 261 500

AIR PROVING GROUND CENTER EGLIN AFB FLA BIOASTRONAUTICS  
DIV

B-58 FLIGHT LINE AND MAINTENANCE HANGAR NOISE SURVEY  
(CARSWELL AFB, TEXAS) (U)

JUL 61 32P LANEY, SHERRILL G.;  
PROJ: APGC-102AH2  
MONITOR: APGC TN-61-27

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRPLANE ENGINE NOISE, \*AIRCRAFT NOISE,  
\*JET BOMBERS, \*JET ENGINE NOISE, CONTROL, FAR  
PROTECTORS, EFFECTIVENESS, HANGARS, HAZARDS, HUMAN  
FACTORS ENGINEERING, MAINTENANCE, MEASUREMENT,  
MEASUREMENT, TEST EQUIPMENT (U)  
IDENTIFIERS: B-58 AIRCRAFT, A01-402 ENGINES (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 263 053

CORNELL AERONAUTICAL LAB INC BUFFALO N Y

EVALUATION OF AIRPORT NOISE AND COMMUNITY  
REACTION

(U)

SFP 60 1V  
CONTRACT: FAA BDR15

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*AIRPORTS, \*JET PLANE  
NOISE, \*PSYCHOACOUSTICS, ACOUSTIC INSULATION, AIRPLANE  
LANDINGS, ANALYSIS, ATTENUATION, INTENSITY, MEASUREMENT,  
TAKEOFF, THEORY (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 267 052

NATIONAL OPINION RESEARCH CENTER UNIV OF CHICAGO ILL

COMMUNITY REACTIONS TO AIR FORCE NOISE. PART I. BASIC  
CONCEPTS AND PRELIMINARY METHODOLOGY (U)

MAR 61 1V BORSKY, PAUL N. ;  
CONTRACT: AF33 616 2624  
MONITOR: ASD TR60 689 V1

UNCLASSIFIED REPORT

DESCRIPTORS: \*JET ENGINE NOISE, \*PUBLIC OPINION,  
\*SOCIOLOGY, AIRPLANE ENGINE NOISE, JET PLANE NOISE (U)

A COMPREHENSIVE CONCEPTUAL SCHEME TO DESCRIBE THE ANNOYANCE AND COMPLAINT PROCESSES INVOLVED IN COMMUNITY REACTIONS TO JET AIRCRAFT NOISE AND RELATED OPERATIONS WAS DEVELOPED. THIS BROAD THEORETICAL FRAMEWORK IS BASED ON A MORE DETAILED EVALUATION OF A NACA STUDY, A SERIES OF INTENSIVE PERSONAL INTERVIEWS WITH NEW YORK CITY AND HANSCOM AIR FORCE BASE RESIDENTS, AND DISCUSSIONS WITH TECHNICAL PERSONNEL CONCERNED WITH ACOUSTICS, PUBLIC RELATIONS, JET MANUFACTURING, AND FLIGHT OPERATIONS. THE THEORETICAL SCHEME DEALS WITH BROAD ASPECTS OF THE PROBLEM: THE OBJECTIVE PHYSICAL CHARACTERISTICS OF JET STIMULI AND RELATED RESIDENTIAL DISTURBANCES, THE INTERVENING SOCIOPSYCHOLOGICAL VARIABLES AFFECTING INDIVIDUAL PERCEPTION, FEELINGS OF ANNOYANCE, THE ADDITIONAL INTERACTING FACTORS MODIFYING INDIVIDUAL EXPRESSION OF SUCH FEELINGS, AND THE OVER-ALL COMMUNITY CONSIDERATIONS DETERMINING THE SCOPE OF COMMUNITY ACTION. A STANDARD PERSONAL INTERVIEW QUESTIONNAIRE WAS DEVELOPED AND PRETESTED FOR POSSIBLE USE IN VALIDATING THE CONCEPTUAL SCHEME AND IN DERIVING PRECISE STATISTICAL RELATIONSHIPS AMONG THE MANY VARIABLES. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 267 057

NATIONAL OPINION RESEARCH CENTER UNIV OF CHICAGO ILL

COMMUNITY REACTIONS TO AIR FORCE NOISE. PART II. DATA  
ON COMMUNITY STUDIES AND THEIR INTERPRETATION (U)

MAR 61 1V BORSKY, PAUL N.;

CONTRACT: AF41 657 59

MONITOR: ASD TR60 689 V2

UNCLASSIFIED REPORT

DESCRIPTORS: \*JET ENGINE NOISE, \*PUBLIC OPINION,  
\*SOCIOLOGY, AIRPLANE ENGINE NOISE, JET PLANE NOISE (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 267 575

BOEING CO MORTON PA VERTOL DIV

NOISE SURVEY HU-1A HELICOPTER WITH MODIFIED EXHAUST  
SYSTEM (U)

JUL 61 1V SPENCER, R. H. ;STERFIELD,  
H. , JR. ;  
REPT. NO. 247  
CONTRACT: DA44 177TC562  
MONITOR: TREC TR61 92

UNCLASSIFIED REPORT

DESCRIPTORS: ACOUSTICS, AIRPLANE ENGINE NOISE, AIRCRAFT  
NOISE, DESIGN, EXHAUST DIFFUSERS, EXHAUST SYSTEMS,  
FLIGHT TESTING, HELICOPTERS, MEASUREMENT, NOISE,  
OPERATION, PRESSURE, TABLES(DATA), TESTS (U)  
IDENTIFIERS: H-1 AIRCRAFT (U)

NOISE LEVELS OF ARMY HU-1A HELICOPTERS 9-1632  
(EQUIPPED WITH A MODIFIED EXHAUST SYSTEM) AND 58-  
2080 (STANDARD CONFIGURATION) WERE RECORDED UNDER  
SIMILAR OPERATING AND AMBIENT CONDITIONS. SOME  
DIFFERENCE EXISTS IN THE 200 FT DIRECTIVITY PATTERNS  
OF THE AIRCRAFT IN HOVER, ALONG WITH AN INCREASE IN  
HIGH FREQUENCY NOISE IN TAKE-OFF AND LANDING. THE  
LATTER MAY BE DUE TO PILOT TECHNIQUES IN ACHIEVING  
THE REQUIREMENTS OF TEST 2. EXCEPT FOR THESE,  
HOWEVER, SOUND PRESSURE LEVELS OF THE AIRCRAFT, UNDER  
SIMILAR OPERATING CONDITIONS, ARE CONSIDERED THE  
SAME. OTHER DIFFERENCES LIE WITHIN THE ENVELOPE OF  
REPEATABILITY. IT IS CONCLUDED THAT THE MODIFIED  
EXHAUST SYSTEM OF HU-1A NO. 9-1632 DOES NOT  
SIGNIFICANTLY AFFECT THE ACOUSTIC CHARACTERISTICS OF  
THE AIRCRAFT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 272 210

LOCKHEED AIRCRAFT CORP BURBANK CALIF

A STUDY OF THE CHARACTERISTICS OF MODERN ENGINE NOISE  
AND THE RESPONSE CHARACTERISTICS OF STRUCTURES (U)

DEC 61 1V COX, R.J.; PARRY, H.J.; CLOUGH, J.;  
CONTRACT: AF33 616 5546  
MONITOR: ASD TR60 220

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARMY, \*JET ENGINE NOISE, \*JET PLANE NOISE,  
\*LOGISTICS, \*MAINTENANCE, \*ORDNANCE, ACOUSTICS,  
AIRFRAMES, DYNAMICS, FATIGUE (MECHANICS), MATHEMATICAL  
ANALYSIS, MATHEMATICAL PREDICTION, MEASUREMENT, NOISE,  
PRESSURE, SOUND, STRUCTURES, TEST METHODS, TESTS (U)  
IDENTIFIERS: J-79 ENGINES (U)

JET ENGINE NOISE A THE RESPONSE OF STRUCTURES TO  
THAT NOISE W RE STU IED. THE NEAR SOUND FIELD  
CHARACTERISTICS OF A JET ENGINE OPERATING ON THE  
GROUND AT BOTH MILITARY AND AFT RBUR ER HRU R  
MEASURED. SOUN PRESSURE LEVELS WERE OBTAINED IN  
THE NEAR FIELD AND WITHIN THE JET WAKE. PRESSURE  
LEVELS AND CROSS-CORRELATION COEFFICIENTS WERE  
OBTAINED IN NEAR FIELD AND WITHIN E JET WAKE.  
PRESSURE LEVELS AND CROSS-CORRELATION COEFFICIENTS  
WERE OBTAINED AT TWO LOCATIONS IN THE NOISE FIELD FOR  
THE FREE FIELD, A RIGID BOUNDARY AND A FLEXIBLE  
BOUNDARY. SEVERAL PANELS, REPRESENTATIVE OF TYPICAL  
AIRFRAME STRUCTURE, WERE SUBJECTED TO T IS JET ENGINE  
NOISE ENVIRONMENT. STRUCTURAL RESPONSE IN TERMS OF  
STRAIN ND ACCELERATIONS WAS MEASURED AND ANALYZED.  
THESE PANELS WERE ALSO SUBJECTED TO DISCRETE  
FREQUENCY EXCITATION TO DETERMINE BASIC RESPONSE  
PARAMETERS. AN ANALYTICAL METHOD FOR THE  
PREDICTION OF RESPONSE OF COMPLEX STRUCTURES IN AN  
ACTUAL JET NOISE ENVIRONMENT WAS DEVELOPED.  
PREDICTED AND MEASURED RESPONSES WERE COMPARED.  
(AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 278 625

BOLT BERANFK AND NEWMAN INC CAMBRIDGE MASS

NOISE FROM AIRCRAFT OPERATIONS

(U)

NOV 61 1V CLARK, WELDEN E.  
REPT. NO. TR61 611  
CONTRACT: AF33 616 5629  
MONITOR: ASD TR61 611

UNCLASSIFIED REPORT

DESCRIPTORS: AIRPLANE ENGINE NOISE, ARMY AIRCRAFT, JET  
ENGINE NOISE, JET PLANE NOISE, PROPELLER NOISE,  
RUNWAYS

(U)

A SUMMARY GENERALIZATION OF KNOWLEDGE IS PRESENTED  
ON AIRCRAFT GROUND AND FLIGHT OPERATIONS IN THE  
VICINITY OF AIR BASES, NOISE SOURCE CHARACTERISTICS  
OF MILITARY AIRCRAFT AND PROPAGATION OF SOUND FROM  
AIRCRAFT TO OBSERVERS IN THE VICINITY OF OR ON AIR  
BASES. DATA FROM EARLIER AIR FORCE STUDIES,  
TOGETHER WITH NEW DATA, HAVE BEEN INCORPORATED INTO  
AIRCRAFT NOISE PREDICTION PROCEDURES AND  
DESCRIPTIONS OF OPERATIONS CHARACTERISTICS. THE  
REPORT PROVIDES AN INTEGRATED PRESENTATION OF  
AVAILABLE INFORMATION REGARDING THE FACTORS TO BE  
CONSIDERED IN DETERMINATION OF NOISE FROM AIRCRAFT  
OPERATIONS. THE RELATIONSHIP IN COMPLEXITY BETWEEN A  
SIMPLIFIED "HANDBOOK" AND THE SPECIFIC, RELEVANT  
SOURCE MATERIAL. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    Z0M09

AD- 294 189

WESTERN ELECTRO-ACOUSTIC LAB INC LOS ANGELES CALIF

ACOUSTICAL EVALUATION OF TYPE II AIRCRAFT GROUND  
RUNUP NOISE SUPPRESSOR AT TRUAX AIR FORCE BASE,  
WISCONSIN

(U)

DEC 62            1V            ELDRED, KENNETH M. I  
REPT. NO.    M22  
CONTRACT:    AF33 616 5744  
PROJ:    AF-7210  
MONITOR:    AMRL            MEMO-M-22

UNCLASSIFIED REPORT

DESCRIPTORS:    \*JET ENGINE NOISE, ACOUSTICS, DESIGN,  
EXHAUST DIFFUSERS, JET FIGHTERS, LOAD DISTRIBUTION,  
REDUCTION, SUPPRESSORS

(U)

ACOUSTICAL EVALUATIONS WERE MADE OF THE TYPE II  
AIRCRAFT GROUND RUNUP NOISE SUPPRESSORS. THE  
EVALUATIONS PROVIDE COMPARISON OF PERFORMANCE WITH  
AND WITHOUT INSTALLATION OF A DIFFUSION SCREEN IN THE  
EXHAUST STREAM. A DESCRIPTION IS PRESENTED OF THE  
SUPPRESSOR'S REDUCTION OF THE NOISE RADIATED BY THE  
AIRCRAFT TO THE FAR FIELD, AND THE CHANGE IN THE  
NOISE ENVIRONMENT FOR MAINTENANCE PERSONNEL RESULTING  
FROM ENCLOSING THE AIRCRAFT. THE NOISE ENVIRONMENT  
IN THE SUPPRESSOR'S CONTROL AND UTILITY ROOMS DURING  
AIRCRAFT RUNUP IS DESCRIBED. THE COMPUTED  
TRANSMISSION LOSS IS REPORTED FOR THE WALLS AND DOORS  
AND AN ESTIMATE OF THE RELATIVE CONTRIBUTIONS OF EACH  
NOISE TRANSMISSION PATH TO THE SUPPRESSOR'S FAR FIELD  
NOISE IS INCLUDED. (AUTHOR)

(U)



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AD- 421 567

ARMY AFROMEDICAL RESEARCH UNIT FORT RUCKER ALA

NOISE PROBLEMS ASSOCIATED WITH THE OPERATION OF US  
ARMY AIRCRAFT, (U)

JUN 63 144P HATFIELD, JIMMY L. ; GASAWAY,  
DONALD C. ;  
REPT. NO. AARU-63-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AIRCRAFT NOISE, HAZARDS), ARMY AIRCRAFT,  
CONTROL, HEARING, AVIATION MEDICINE, RECONNAISSANCE  
AIRCRAFT, HELICOPTERS, VIBRATION, ENGINE NOISE,  
MEASUREMENT, HUMANS, SPEECH TRANSMISSION, AIRPLANE  
ENGINE NOISE, VERTICAL TAKEOFF AIRCRAFT, SHORT TAKEOFF  
AIRCRAFT, INTERNAL COMBUSTION ENGINE NOISE (U)

THIS REPORT DESCRIBES AND ILLUSTRATES BASIC, AS  
WELL AS UNIQUE, CHARACTERISTICS OF NOISE ASSOCIATED  
WITH THE OPERATION OF ARMY AIRCRAFT. IT  
SUMMARIZES THE IMPORTANT FACTS RELATIVE TO HAZARDOUS  
NOISE, ITS EFFECTS ON MAN, THE CHARACTERISTICS OF  
NOISE GENERATORS, NOISE REDUCTION CONCEPTS, AND  
FUTURE NOISE PROBLEMS. THE PURPOSE IS TO ALERT  
AVIATION MEDICAL OFFICERS, FLIGHT SURGEONS, AND  
PHYSICIANS IN THE ARMY TO THIS PROBLEM, AND PROVIDE  
GUIDANCE IN THOSE CIRCUMSTANCES WHERE A PROBLEM OF  
POTENTIALLY HAZARDOUS NOISE EXISTS. (AUTHOR) (U)

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AD- 427 666

ADVISORY GROUP FOR AERONAUTICAL RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)

NOISE AND ITS EFFECT ON AIRCRAFT OPERATION, (U)

JAN 63 19P COLES, G. M. ;  
MONITOR: AGARD 433

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE AIRCRAFT TAKE-OFF AND LANDING SPECIALISTS' MEETING, SPONSORED BY THE AGARD FLIGHT MECHANICS PANEL, HELD IN PARIS, 15-18 JAN 63.

DESCRIPTORS: (\*JET ENGINE NOISE, REDUCTION), (\*JET TRANSPORT PLANES, FLIGHT PATHS), LOW ALTITUDE, AIRSPEED, TAKEOFF, CLIMBING, TOLERANCES (PHYSIOLOGY), ACCELERATION, WEIGHT, DISTRIBUTION, AIRPLANE LANDINGS, COMPRESSOR NOISE, OPERATION, AIRCRAFT NOISE, PUBLIC OPINION (U)

THE NOISE GENERATED BY A JET ENGINE CAN BE CONSIDERED AS BEING MADE UP OF TWO MAIN FORMS: THAT GENERATED EXTERNALLY (E.G. JET NOISE), AND THAT GENERATED INTERNALLY (E.G. COMPRESSOR NOISE). IN THE IN-FLIGHT OPERATION OF A PARTICULAR AIRCRAFT THE THREE FACTORS MOST SIGNIFICANTLY AFFECTING COMMUNITY NOISE LEVEL ARE ALTITUDE, AIRSPEED AND POWER SETTING. AS EACH OF THESE FACTORS AFFECTS EACH FORM OF NOISE GENERATION IN A DIFFERENT WAY, A CONSIDERABLE INVESTIGATION OF POSSIBLE TAKE-OFF TECHNIQUES MUST BE CARRIED OUT IN ORDER TO ACHIEVE THE MAXIMUM COMMUNITY BENEFIT FROM SPECIAL PROCEDURES. OPERATIONAL TECHNIQUES AIMED AT REDUCING COMMUNITY NOISE LEVELS CONSIST OF FLYING THE AIRCRAFT SUCH THAT THE MOST FAVOURABLE COMBINATION OF AIRSPEED, ALTITUDE AND POWER SETTING IS ACHIEVED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 432 086

GENERAL ELECTRIC CO CINCINNATI OHIO

INVESTIGATION OF THE NOISE ASPECTS OF CARRIER DECK  
JET ENGINE OPERATION, AND EFFECTS OF NOISE  
SUPPRESSION ON AIRCRAFT MISSION PERFORMANCE. VOLUME  
I. EFFECTS OF NOISE FROM CARRIER DECK JET ENGINE  
OPERATION ON HEARING, SPEECH INTERFERENCE, AND SONIC  
FATIGUE. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON PHASE II,  
JAN 64 129P WELLS, R. J. ; SCHULZ, M. W. ;  
TATGE, R. B. ;  
CONTRACT: NOW-62-0887

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*JET ENGINE NOISE, NAVAL AIRCRAFT),  
(\*PHYSIOLOGY, HEARING), (\*HEARING, FATIGUE (PHYSIOLOGY),  
SUPPRESSORS, ACOUSTICS, SPEECH TRANSMISSION, PATHOLOGY,  
EFFECTIVENESS, MATHEMATICAL ANALYSIS, LINEAR SYSTEMS,  
TRANSFORMATIONS (MATHEMATICS), STRESS (PHYSIOLOGY) (U)  
IDENTIFIERS: RANDOM PROCESSES (U)

INFORMATION GATHERED FROM A LITERATURE SEARCH  
RELATIVE TO HEARING LOSS VS. NOISE EXPOSURE IS  
REVIEWED. THE RESULTS OF SUCH STUDIES ARE APPLIED  
TO THE SPECIFIC PROBLEM OF DETERMINING CRITERIA  
APPLICABLE TO THE HEARING DAMAGE RISK PROBLEM ABOARD  
AIRCRAFT CARRIERS. SIMPLE NOMOGRAMS ARE DERIVED  
TO QUICKLY EVALUATE THE MAXIMUM ALLOWABLE EXPOSURE  
TIME TO A GIVEN SEQUENCE OF TAKE-OFFS EXPRESSED IN  
TERMS OF OCTAVE-BAND SOUND LEVEL VS. TIME PLOTS AT  
THE OBSERVER'S EAR. THESE CHARTS ARE BASED UPON  
THE ALLOWANCE OF A COMPUTED TTS2 (TEMPORARY  
THRESHOLD SHIFT 2 MINUTES AFTER EXPOSURE TO THE  
NOISE) OF 10-13 DB AT 2000 CPS AND 20-23 DB AT 4000  
CPS. ADDITIONAL NOMOGRAMS ALLOW RAPID COMPUTATION  
OF TTS GROWTH AND RECOVERY DURING NOISY AND QUIET  
PERIODS RESPECTIVELY. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 615 015

BOLT BERANFK AND NEWMAN INC LOS ANGELES CALIF

LAND USE PLANNING RELATING TO AIRCRAFT NOISE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

OCT 64 58P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: JOINTLY SUPPORTED BY THE USAF AND  
THE FAA.

DESCRIPTORS: (\*AIRPLANE ENGINE NOISE, URBAN PLANNING),  
(\*URBAN PLANNING, AIRPLANE ENGINE NOISE), TERMINAL  
FLIGHT FACILITIES, URBAN AREAS, SITE SELECTION,  
INSTRUCTION MANUALS, JET ENGINE NOISE, HEARING,  
THRESHOLDS (PHYSIOLOGY), DETERMINATION, CIVIL AVIATION,  
MILITARY OPERATIONS (U)

THIS MANUAL DESCRIBES A PROCEDURE FOR PREDICTING  
AVERAGE COMMUNITY RESPONSES TO ENGINE NOISE GENERATED  
BY AIRCRAFT OPERATIONS. THROUGH THE USE OF THIS  
PROCEDURE IT BECOMES POSSIBLE TO APPLY THE SAME  
YARDSTICK TO MILITARY AND CIVIL AIRCRAFT NOISE  
PROBLEMS. THE PROCEDURE THEREFORE CAN SERVE AS A  
UNIFORM GUIDE IN PLANS FOR LAND UTILIZATION IN THE  
VICINITY OF MILITARY, CIVIL AND COMBINED AIRFIELD  
ACILITIES WORLD-WIDE. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 617 763

BOLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

NOISE CONTOURS FOR SHORT AND MEDIUM RANGE TRANSPORT  
AIRCRAFT AND BUSINESS AIRCRAFT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAR 65 47P BISHOP, DWIGHT F. I  
CONTRACT: FA64WA4949  
MONITOR: FAA-ADS , 35

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*TRANSPORT AIRCRAFT, AIRCRAFT NOISE),  
(\*COMMERCIAL PLANES, AIRCRAFT NOISE), (\*AIRCRAFT NOISE,  
TRANSPORT AIRCRAFT), AIRPLANE ENGINE NOISE, JET ENGINE  
NOISE, MEASUREMENT, TAKEOFF, LANDING, AIRPORTS (U)

GENERALIZED NOISE CONTOURS, IN TERMS OF THE  
PERCEIVED NOISE LEVEL, ARE PRESENTED FOR TAKEOFF AND  
LANDING OPERATIONS OF: A) TWO AND THREE ENGINE,  
SHORT AND MEDIUM RANGE TURBOJET AND TURBOFAN  
TRANSPORT AIRCRAFT, (BOEING 727, BAC 1-11,  
DOUGLAS DC-9 AND SUD AVIATION CARAVELLE 3  
AND 6); B) MULTI-ENGINE TURBOJET AND TURBOFAN  
BUSINESS AIRCRAFT (JET COMMANDER 1121, DASSAULT  
FALCON, HAWKER SIDDELEY D. H. 125, LEAR  
JET 23, LOCKHEED JETSTAR AND NORTH  
AMERICAN SABRELINER); AND C) TWO-ENGINE  
PROPELLER TRANSPORT AND BUSINESS AIRCRAFT.  
ESTIMATES OF GROUND RUNUP NOISE FOR AIRCRAFT IN  
GROUPS A) AND B) ABOVE ARE ALSO PRESENTED. THE  
NOISE CONTOURS ARE BASED ON NOISE MEASUREMENTS AND  
ESTIMATES. THE NOISE CONTOURS EXTEND THE SCOPE OF  
AIRCRAFT NOISE INFORMATION FOR LAND USE PLANNING IN  
THE VICINITY OF AIRPORTS. THE NOISE INFORMATION  
SHOULD BE PARTICULARLY HELPFUL IN DESCRIBING THE  
NOISE ENVIRONMENT IN AND ABOUT SMALLER AIRPORTS NOT  
REGULARLY HANDLING MILITARY OR LARGE CIVIL JET  
TRANSPORT AIRCRAFT. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 617 764

BOLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

HELICOPTER NOISE CHARACTERISTICS FOR HELIPORT  
PLANNING.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

MAR 65 70P BISHOP, DWIGHT F. ;

CONTRACT: FA64WA4949

MONITOR: FAA-ADS, 40

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*HELICOPTORS, ENGINE NOISE), (\*ENGINE  
NOISE, HELICOPTERS), (\*AIRPORTS, ENGINE NOISE), URBAN  
AREAS, NOISE, TAKEOFF, LANDING, HOVERING, LANDING  
FIELDS, SITE SELECTION, AUDITORY PERCEPTION

(U)

THE REPORT PRESENTS TECHNICAL INFORMATION AND  
PROCEDURES FOR ESTIMATING THE NOISE LEVELS PRODUCED  
BY CURRENT CIVIL AND MILITARY HELICOPTERS (PISTON-  
AND TURBINE-POWERED) DURING VARIED FLIGHT AND  
GROUND OPERATIONS. INFORMATION AND PROCEDURES ARE  
ALSO PRESENTED FOR COMPARING HELICOPTER NOISE WITH  
OTHER VEHICLE NOISE, AND WITH AMBIENT NOISE FOUND IN  
TYPICAL URBAN AND SUBURBAN AREAS. THESE PROCEDURES  
PERMIT AN ASSESSMENT OF THE EXTENT TO WHICH  
HELICOPTER NOISE IS COMPATIBLE WITH TYPICAL LAND USES  
(RESIDENTIAL, COMMERCIAL, INDUSTRIAL, ETC.) IN  
AREAS NEAR HELIPORTS. NOISE DATA AND PROCEDURES  
ARE PRESENTED IN SIMPLIFIED FASHION. THE  
INFORMATION MAY BE READILY USED BY THOSE WITHOUT  
SPECIALIZED ACOUSTICAL TRAINING BUT WHO ARE CONCERNED  
WITH THE LOCATION AND DEVELOPMENT OF A HELIPORT, OR  
WITH LAND PLANNING OR LAND ZONING IN THE VICINITY OF  
HELIPORTS. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 617 765

BOLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

FACTORS INFLUENCING THE NOISE EXPOSURE UNDER THE  
LANDING PATH FOR JET TRANSPORT AIRCRAFT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

MAR 65 37P PIETRASANTA, A. C. ;

CONTRACT FA64WA4949

MONITORING ADS , 39

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*JET TRANSPORT PLANES, JET ENGINE NOISE),  
(\*TURBOPROP ENGINES, ENGINE NOISE), (\*JET ENGINE NOISE,  
FLIGHT PATHS), (\*FLIGHT PATHS, JET ENGINE NOISE),  
AIRPORTS, LANDING, RUNWAYS, TURBOJET ENGINES, AUDITORY  
PERCEPTION (U)  
IDENTIFIERS: CONVAIR 990 AIRCRAFT, C-135 AIRCRAFT (U)

ON THE BASIS OF AVAILABLE ACOUSTICAL DATA  
CALCULATIONS HAVE BEEN MADE TO DETERMINE THE  
QUANTITATIVE EFFECT ON THE NOISE EXPOSURE UNDER THE  
LANDING PATH OF CHANGES IN RUNWAY THRESHOLD LOCATION,  
GLIDE SLOPE ANGLE, AND ENGINE POWER SETTING. EACH  
OF THESE FACTORS HAS BEEN EXAMINED INDEPENDENTLY,  
I.E. WITH ALL OTHER CONDITIONS HELD CONSTANT, FOR  
OPERATION OF A TURBOFAN-POWERED CONVAIR 990 AND A  
TURBOJET-POWERED BOEING 707-120. CHANGES IN  
NOISE EXPOSURE ARE DESCRIBED IN TERMS OF CHANGES IN  
PERCEIVED NOISE LEVEL AND/OR CHANGES IN THE AREA  
ENCLOSED BY EQUAL PERCEIVED-NOISE-LEVEL CONTOURS FOR  
A RANGE IN GLIDE SLOPE ANGLES FROM 2-1/2 TO 6  
DEGREES, RUNWAY THRESHOLD DISPLACEMENTS OF 1000 FEET  
AND 2000 FEET, AND FOUR DIFFERENT ENGINE POWER  
SETTINGS FROM APPROXIMATELY 60% THRUST DOWNWARD.  
THE RESULTS CAN BE GENERALIZED TO APPLY TO  
ESSENTIALLY ALL FOUR-ENGINE COMMERCIAL JET AIRLINERS  
IN OPERATION TODAY. THEY PROVIDE THE BASIS WHEREBY  
CHANGES IN THESE FACTORS CAN BE EVALUATED IN TERMS OF  
THEIR EFFECTIVENESS IN REDUCING NOISE EXPOSURE ALONE.  
FURTHER, TRADING RELATIONSHIPS AMONG CHANGES IN  
THESE FACTORS CAN BE DERIVED FROM THE DATA.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 617 766

BOLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

STUDY OF THE EFFECT OF DEPARTURE PROCEDURES ON THE  
NOISE PRODUCED BY JET TRANSPORT AIRCRAFT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

MAR 65 68P GALLOWAY, W. J. IPIETRASANTA, A.

C. I PEARSONS, K. S. ;

CONTRACT: FA64WA4949

MONITOR: FAA-ADS , 41

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*JET TRANSPORT PLANES, JET-ENGINE NOISE),  
(\*JET ENGINE NOISE, TAKEOFF), (\*TAKEOFF, JET ENGINE  
NOISE), AIRPORTS, OPERATION, FLIGHT PATHS, AUDITORY  
PERCEPTION (U)

THE EFFECT OF VARIOUS DEPARTURE PROCEDURES OF  
COMMERCIAL JET TRANSPORT AIRCRAFT ON THE NOISE  
PRODUCED ON THE GROUND UNDER THE DEPARTURE PATH ARE  
PRESENTED. NOISE DATA AT FOUR MEASUREMENT STATIONS  
UNDER THE FLIGHT PATH OF RUNWAY 13R AT JOHN F.  
KENNEDY INTERNATIONAL AIRPORT, NEW YORK,  
WERE OBTAINED FROM 300 AIRCRAFT DEPARTURES. FOUR  
DIFFERENT CLASSES OF DEPARTURE PROCEDURES, INCLUDING  
THOSE SPECIFIED BY CURRENT AIRLINE OPERATING  
PRACTICES, ARE COMPARED WITH THE NOISE PRODUCED BY A  
RANDOM SET OF AIRCRAFT OPERATIONS WHERE THE DEPARTURE  
PROCEDURE WAS UNSPECIFIED. DETAILED RADAR  
OBSERVATIONS OF THE AIRCRAFT FLIGHTS, OPERATIONAL  
INFORMATION REPORTED BY PILOTS FLYING SPECIFIED  
PROCEDURES, AND THE MEASURED NOISE DATA ON ALL  
FLIGHTS OBSERVED WERE USED IN EVALUATING THE VARIOUS  
DEPARTURE PROCEDURES. THE STUDY SHOWS THAT  
IMPLEMENTATION OF A PROPOSED DEPARTURE PROCEDURE  
COULD REDUCE THE NOISE LEVELS ON THE GROUND UNDER JET  
TRANSPORT TAKEOFFS BY AS MUCH AS 8 PND8 AS  
COMPARED TO THE NOISE PRODUCED BY EXISTING  
PROCEDURES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 617 935

BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

SOME FACTORS INFLUENCING HUMAN RESPONSE TO AIRCRAFT  
NOISE: MASKING OF SPEECH AND VARIABILITY OF  
SUBJECTIVE JUDGMENTS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

JUN 65 72P KRYTER, K. D. ; WILLIAMS, C. E.

REPT. NO. BRN-1234

CONTRACT: FA64WA4951

PROJ: 361 12H

MONITOR: FAA-ADS , 42

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AIRCRAFT NOISE, REACTION(PSYCHOLOGY)),  
(\*SPEECH RECOGNITION, AIRCRAFT NOISE),  
THRESHOLDS(PHYSIOLOGY), SPEECH, INTELLIGIBILITY,  
HEARING, TOLERANCES(PHYSIOLOGY), PSYCHOACOUSTICS,  
STATISTICAL ANALYSIS, GRAPHICS (U)

STATISTICS OF THE VARIABILITY OF SUBJECTIVE  
JUDGMENTS OF THE LOUDNESS AND NOISINESS OF PURE TONES  
AND COMPLEX SOUNDS AS STUDIED IN THE LABORATORY AND  
IN THE FIELD ARE PRESENTED. AN ANALYSIS OF  
POSSIBLE SOURCES OR CAUSES OF THIS VARIABILITY IS  
MADE IN TERMS OF TEST-RETEST RELIABILITY, DIFFERENCES  
AMONG SUBJECTS, TYPE OF SOUNDS JUDGED AND  
EXPERIMENTAL METHOD USED IN OBTAINING JUDGMENTS.  
POSSIBLE CONTRIBUTIONS TO VARIABILITY OF JUDGMENTS  
DUE TO DIFFERENCES IN THE SIZE OF THE EXTERNAL EAR  
AND THE THRESHOLDS OF AUDITORY SENSITIVITY AT  
DIFFERENT SOUND FREQUENCIES FOR DIFFERENT AGE GROUPS  
ARE DISCUSSED. WORD INTELLIGIBILITY TESTS AT  
VARIOUS INTENSITY LEVELS WERE ADMINISTERED TO A CREW  
OF TRAINED LISTENERS IN THE PRESENCE OF RECORDED  
NOISE FROM JET AND PROPELLER-DRIVEN AIRCRAFT. THE  
NOISE WAS THAT WHICH WOULD BE PRESENT OUTDOORS AND IN  
A HOUSE AS THE RESULT OF ENGINE RUN-UP OPERATIONS AND  
WHEN THE AIRCRAFT WERE FLYING OVERHEAD SHORTLY AFTER  
TAKE-OFF AND PRIOR TO LANDING. METHODS OF  
MEASURING OR EVALUATING AIRCRAFT NOISE PREDICT THE  
RESULTS OF THE SPEECH TESTS IN THE FOLLOWING ORDER OF  
MERIT, FROM BEST TO WORSE: (1) ARTICULATION  
INDEX (AI); (2) AND (3) PERCEIVED NOISE  
LEVEL IN PNDB AND SPEECH INTERFERENCE LEVEL  
(SIL) (SIL AND PNDB APPEAR TO PREDICT THE  
MASKING OF SPEECH ABOUT EQUALLY WELL); (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 617 954

BOLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

LAND USE PLANNING RELATING TO AIRCRAFT NOISE,  
APPENDIX A.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

MAY 65 14P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-615 015.

DESCRIPTORS: (\*AIRCRAFT NOISE, URBAN PLANNING), (\*URBAN  
PLANNING, AIRCRAFT NOISE), (\*AIRPLANE ENGINE NOISE,  
URBAN PLANNING), JET ENGINE NOISE, COMMERCIAL PLANES,  
CIVIL AVIATION, URBAN AREAS, TAKEOFF, LANDING, SITE  
SELECTION

(U)

THE APPENDIX PRESENTS PERCEIVED NOISE LEVEL  
CONTOURS FOR THE TAKEOFF AND LANDING OPERATIONS OF  
THE FOLLOWING TYPES OF CIVIL AIRCRAFT: (A) TWO  
AND THREE ENGINE, SHORT AND MEDIUM RANGE TURBOJET AND  
TURBOFAN TRANSPORTS (B) MULTI-ENGINE SMALL  
BUSINESS TURBOJET AND TURBOFAN AIRCRAFT (C) TWO-  
ENGINE PISTON AND TURBOPROP AIRCRAFT, BOTH TRANSPORT  
AND BUSINESS. THESE CONTOURS PERMIT THE  
DETERMINATION OF THE NOISE LEVEL IN PNOB OVER A  
WIDE AREA BENEATH AND OFF TO THE SIDE OF A FLIGHT  
PATH. THE APPENDIX ALSO INCLUDES A RUNUP NOISE  
CONTOUR FOR ESTIMATING THE NOISE FROM GROUND RUNUPS  
OF CIVIL AND MILITARY TURBOFAN ENGINES.

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 618 190

BOLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

ANALYSIS OF COMMUNITY AND AIRPORT RELATIONSHIPS/NOISE  
ABATEMENT. VOLUME I. AN APPROACH TO ANALYSIS OF  
AIRCRAFT NOISE PROBLEMS USING COMPUTER-AIDED  
TECHNIQUES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. FOR MAY 63-APR 64,

DFC 64 73P CLARK, WELDEN E. ;

REPT. NO. BBN-1093 VOL. 1

CONTRACT: FA WA4409

PROJ: 430 001 01R

MONITOR: SRDS , RD-64-148 V1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AIRCRAFT NOISE, URBAN AREAS), (\*URBAN  
AREAS, AIRCRAFT NOISE), (\*COMPUTER PROGRAMMING, AIRCRAFT  
NOISE), FLIGHT PATHS, URBAN PLANNING, AIR  
TRANSPORTATION, JET PLANE NOISE, COMMERCIAL PLANES,  
DIGITAL COMPUTERS, PUBLIC OPINION, PUBLIC RELATIONS (U)

DEVELOPMENT OF A COMPUTER-AIDED APPROACH TO THE  
ANALYSIS OF AIRCRAFT NOISE AS IT AFFECTS COMMUNITIES  
NEAR AIRPORTS IS SUMMARIZED IN THE REPORT. THE  
MAJOR FACTORS THAT MUST BE DESCRIBED TO SPECIFY THE  
NOISE STIMULUS AND THE FACTORS WHICH APPEAR TO BE  
RELEVANT TO DESCRIPTION OF THE COMMUNITY-WIDE  
RESPONSE TO THAT NOISE ARE DISCUSSED AND DIAGRAMMED.  
AN APPROACH TO ANALYSIS OF AIRCRAFT NOISE  
SITUATIONS THAT INVOLVES CLOSE MAN-COMPUTER  
INTERACTION IS FORMULATED AND PROGRAMMING TO  
IMPLEMENT THIS APPROACH IS DESCRIBED. SOME  
ILLUSTRATIONS OF THE PROCESS ARE PRESENTED. THE  
MAJOR COMPUTER PROGRAMS BEING DEVELOPED WILL:  
(A) CALCULATE PERCEIVED NOISE LEVELS FROM OCTAVE  
BAND NOISE SPECTRA; (B) CALCULATE AREAS FROM  
GRAPHICAL INPUT DATA (MAPS, NOISE CONTOURS);  
(C) CALCULATE AND DISPLAY NOISE CONTOURS FOR A  
SIMULATED AIRCRAFT FLIGHT; (D) CALCULATE THE TIME  
PATTERN OF NOISE EXPOSURE AT A GROUND POSITION NEAR  
AN AIRCRAFT FLIGHT PATH; AND (E) CALCULATE AND  
ASSEMBLE THE NOISE LEVELS OCCURRING AT MULTIPLE  
GROUND POSITIONS DURING A NUMBER OF SIMULATED  
AIRCRAFT FLIGHTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 618 191

BOLT BERANFK AND NEWMAN INC LOS ANGELES CALIF

ANALYSIS OF COMMUNITY AND AIRPORT RELATIONSHIPS NOISE  
ABATEMENT. VOLUME II. DEVELOPMENT OF AIRCRAFT NOISE  
COMPATIBILITY CRITERIA FOR VARIED LAND USES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. FOR MAY 63-APR 64,  
DEC 64 108P BISHOP, DWIGHT E. ;  
REPT. NO. BRN-1093 VOL. 2  
CONTRACT: FA WA4409  
PROJ: 430 001 01R  
MONITOR: SRDS , RD-64-148 V2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AIRCRAFT NOISE, URBAN AREAS), (\*URBAN  
PLANNING, AIRCRAFT NOISE), BUILDINGS, CONSTRUCTION, JET  
PLANE NOISE, COMMERCIAL PLANES, PUBLIC OPINION, PUBLIC  
RELATIONS (U)

THE REPORT DESCRIBES TWO SIMPLIFIED PROCEDURES FOR  
ANALYZING AIRCRAFT NOISE IN THE VICINITY OF AIRPORTS  
TO DETERMINE: (A) WHETHER OR NOT AIRCRAFT NOISE  
WILL INTERFERE WITH WORK ACTIVITIES OR LAND USE, AND  
(B) WHAT BUILDING ARRANGEMENTS AND CONSTRUCTION  
FEATURES SHOULD BE INCORPORATED IN BUILDING DESIGN SO  
THAT AIRCRAFT NOISE WILL NOT INTERFERE WITH PLANNED  
ACTIVITIES INSIDE BUILDINGS. THE FIRST PROCEDURE  
IS GENERAL IN NATURE AND DEFINES AIRCRAFT NOISE  
ACCEPTABILITY CRITERIA FOR BROAD CATEGORIES OF LAND  
USE (RESIDENTIAL, COMMERCIAL, INDUSTRIAL, ETC.).  
THE SECOND PROCEDURE PROVIDES METHODS FOR DEVELOPING  
AIRCRAFT NOISE CRITERIA FOR SPECIFIC WORK ACTIVITIES  
HAVING VARYING DEGREES OF DEPENDENCE UPON SPEECH  
COMMUNICATION OR FREEDOM FROM NOISE INTERFERENCE; IT  
ALSO SPECIFIES METHODS FOR EVALUATING THE NOISE  
PROTECTION AFFORDED BY DIFFERENT TYPES OF BUILDING  
CONSTRUCTION AND BUILDING ARRANGEMENTS. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 619 282

FEDERAL AVIATION AGENCY WASHINGTON D C

PRESENTATIONS AT NATIONAL AIRCRAFT NOISE SYMPOSIUM,  
SPONSORED BY THE FEDERAL AVIATION AGENCY AT THE  
INTERNATIONAL HOTEL, JOHN F. KENNEDY INTERNATIONAL  
AIRPORT, JAMAICA, NEW YORK, JUNE 9, 1965. (U)

65 92P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, SYMPOSIA), (\*AIRPLANE  
ENGINE NOISE, URBAN AREAS), AIRPORTS, FLIGHT PATHS,  
URBAN PLANNING, JET ENGINE NOISE, SUPERSONIC AIRCRAFT,  
AIR POLLUTION, ODORS, AIR TRANSPORTATION, COSTS, UNITED  
STATES GOVERNMENT (U)

THE EFFORTS OF INDUSTRY AND GOVERNMENT IN SEEKING A  
SOLUTION TO THE PROBLEM OF AIRCRAFT NOISE IN URBAN  
AREAS ARE DISCUSSED. IT IS SUGGESTED THAT THE  
AVIATION COMMUNITY AND THE COMMUNITIES SURROUNDING  
GREAT METROPOLITAN AIRPORTS JOIN HANDS IN TAKING  
RESPONSIBLE AND EFFECTIVE ACTION IN DEALING WITH THE  
PROBLEM. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 619 409

SCHOOL OF AVIATION MEDICINE RANDOLPH AFB TEX

AN EVALUATION OF PATIENTS SUSPECTED OF HAVING NOISE-  
INDUCED HEARING LOSS, (U)

JUN 59 17P KRAUS, RALPH N. ;  
REPT. NO. REVIEW-4-59

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*NOISE, HEARING), (\*AIR FORCE PERSONNEL,  
HEARING), (\*HEARING, AIR FORCE PERSONNEL), AUDITORY  
PERCEPTION, JET ENGINE NOISE, THRESHOLDS(PHYSIOLOGY),  
AUDITORY ACUITY, AUDIO FREQUENCY, MEDICAL EXAMINATION,  
AUDIOMETRY, PATHOLOGY, AVIATION MEDICINE (U)

THE RESULTS OF AN EVALUATION OF 77 U. S. AIR  
FORCE FLIGHT-LINE PERSONNEL WITH DEFECTIVE HEARING  
ARE REPORTED. THE EVALUATION REVEALED THAT 29  
PATIENTS HAD A CONDUCTIVETYPE, 7 HAD A FUNCTIONAL-  
TYPE, AND 41 HAD A PERCEPTIVE-TYPE DEFECT. TWENTY-  
TWO OF THESE PERCEPTIVE CASES WERE UNILATERAL. IN  
ONLY 19 CASES WAS NOISE EXPOSURE CONSIDERED TO BE A  
POSSIBLE CAUSE OF DEFECTIVE HEARING. THE  
DIFFICULTIES ENCOUNTERED IN ATTEMPTING TO DETERMINE  
WHETHER DEFECTIVE HEARING IN A SPECIFIC PATIENT IS  
CAUSED OR AGGRAVATED BY NOISE EXPOSURE ARE DISCUSSED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 620 347

TENNESSEE UNIV KNOXVILLE

AN ANALYSIS OF LIABILITY IN AIRCRAFT TRESPASS AND  
NUISANCE CASES SINCE 1958.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,

AUG 65 85P ROBINS, RAYMOND C. ;

CONTRACT: AF33 608 1118

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED TO THE GRADUATE COUNCIL  
OF THE UNIVERSITY OF TENNESSEE.

DESCRIPTORS: (\*JET PLANE NOISE, LAW), (\*LAW, JET PLANE  
NOISE), SONIC BOOM, AIRPORTS, MILITARY FACILITIES,  
UNITED STATES GOVERNMENT, AIRCRAFT NOISE, LOW ALTITUDE,  
FLIGHT, MILITARY LAW (U)

THE STUDY DISCUSSES THE NATURE OF THE AIRCRAFT  
NOISE PROBLEM, ANALYZES COURT CASES INVOLVING JET  
NOISE AROUND AIRPORTS AND MILITARY BASES, AND  
IDENTIFIES THE FACTORS SIGNIFICANT IN DETERMINING  
WHETHER NOISE CONSTITUTES A COMPENSABLE DAMAGE. IN  
THE 1946 'UNITED STATES V. CAUSBY' CASE, THE  
U. S. WAS HELD LIABLE FOR THE NOISE OF ARMY  
PLANES THAT INTERFERED SERIOUSLY WITH THE OPERATION  
OF CAUSBY'S CHICKEN FARM. IN THE 1962 'GRIGGS  
V. ALLEGHENY COUNTY' CASE, THE SUPREME COURT  
HELD THE MUNICIPALITY OPERATING THE GREATER  
PITTSBURG AIRPORT LIABLE FOR AIRCRAFT NOISE,  
SAYING THE COUNTY SHOULD HAVE CONDEMNED ENOUGH  
PROPERTY TO PREVENT AIRCRAFT OPERATIONS FROM  
INTERFERING WITH ADJACENT LANDOWNERS. THE  
CONTENTION IS MADE THAT (1) HIGHER COURTS SHOULD  
INSIST ON MORE CONSISTENT INTERPRETATION OF THE  
CRITERIA USED TO DETERMINE WHEN AN EASEMENT HAS BEEN  
TAKEN, ALTITUDE ALONE BEING A LESS IMPORTANT FACTOR  
THAN OTHERS, (2) INTENSITY AND FREQUENCY OF NOISE  
AND THE USE MADE OF THE PROPERTY IS MORE IMPORTANT  
THAN A LINE MARKING THE PROPERTY BOUNDARY, (3)  
RIGID REQUIREMENTS SHOULD BE SET TO INSURE ADEQUATE  
SPACE FOR NEW AIRPORTS, (4) SOLVING THE NOISE  
PROBLEM AT EXISTING AIRPORTS SHOULD BE A COOPERATIVE  
EFFORT, AND (5) DETERMINATION OF COMPENSABLE  
NOISE DAMAGE SHOULD BE MADE BY COURTS WITH  
CONSIDERATION MORE FOR DEGREE OF DISTURBANCE THAN FOR  
PROPERTY BOUNDARIES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 623 086

AFROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

NEARFIELD INFRASONIC NOISE GENERATED BY THREE  
TURBOJET AIRCRAFT DURING GROUND RUNUP OPERATIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JUN-AUG 64,  
AUG 65 25P ENGLAND, ROBERT T. POWELL,  
ROBERT G. I  
REPT. NO. AMRL-TR-65-132  
PROJ: 7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*TURBOJET ENGINES, NOISE), (\*NOISE, TURBOJET ENGINES),  
(\*ACOUSTICS, JET ENGINE NOISE), AIRPLANES, TAXIING,  
TAKEOFF, SOUND, LOW FREQUENCY, THRESHOLDS (PHYSIOLOGY),  
MEASUREMENT, ACOUSTIC EQUIPMENT (U)

ACOUSTIC MEASUREMENTS IN THE FREQUENCY RANGE  
BETWEEN 4.5 TO 4500 CYCLES PER SECOND WERE MADE ON  
THE NEAR FIELD SOUND PRESSURE ENVIRONMENT PRODUCED BY  
THE F-101B, NF-102A, AND F-106A TURBOJET  
AIRCRAFT DURING GROUND RUNUP OPERATIONS. RESULTS  
FROM TWENTYEIGHT MICROPHONE LOCATIONS SHOW THAT THE  
MAXIMUM INFRASONIC NOISE BELOW AUDIO FREQUENCY RANGE  
IS GENERATED DOWNSTREAM FROM THE EXHAUST NOZZLE AND  
AT ENGINE SETTINGS PRODUCING MAXIMUM TURBULENT FLOW.  
(AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 63A 355 5/9 17/2  
PURDUE UNIV LAFAYETTE IND

AN EXPERIMENTAL COMPARISON OF 5 CONDITIONS FOR VOICE  
COMMUNICATION TRAINING. (U)

AUG 47 60P KELLY, J. C. ; MASON, HARRY M. ;  
REPT. NO. 4,  
CONTRACT: N6ORI-104(02),  
PROJ: PRF-20-K-1,  
MONITOR: SPECDEV CEN 104-2-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*SPEECH, TRAINING), (\*TRAINING DEVICES,  
SPEECH), (\*VOICE COMMUNICATIONS, TRAINING DEVICES),  
SPEECH TRANSMISSION, NOISE, AIRCRAFT NOISE,  
INTELLIGIBILITY (U)

FIVE GROUPS OF UNDERGRADUATE MEN WERE TRAINED TO  
INCREASE WORD-INTELLIGIBILITY UNDER DIFFICULT  
COMMUNICATION CONDITIONS, USING COURSE CONTENT  
FOUNDED ON EXPERIENCE GAINED DURING WORLD WAR  
II. EACH GROUP WAS TRAINED IN A SITUATION  
PRESENTING A DIFFERENT TYPE OR AMOUNT OF  
INTERFERENCE. EFFECTS OF TRAINING WERE EVALUATED  
BY WORD-INTELLIGIBILITY TESTS AND BY JUDGMENTS OF  
CONNECTED SPEECH. COMPARISON OF INCREASES IN WORD-  
INTELLIGIBILITY OF EXPERIMENTAL AND CONTROL SUBJECTS  
SHOWS THAT: (A) SUBJECTS WHICH PRACTICED UNDER  
THE MOST SEVERE NOISE CONDITION GAINED LEAST. THIS  
MOST SEVERE CONDITION WAS THE SAME AS THE TEST  
CONDITION USED TO EVALUATE TRAINING OF ALL GROUPS.  
(B) SUBJECTS TRAINED UNDER CONDITIONS OF NOISE  
10DB LESS SEVERE, GAINED SLIGHTLY MORE THAN THOSE  
TRAINED UNDER MOST SEVERE NOISE. (C) SUBJECTS  
TRAINED UNDER A CONDITION PRESENTING A LESS INTENSE  
NOISE THAN USED IN (B) ABOVE, GAINED MORE THAN  
ANY OTHER GROUP. THE NOISE USED WITH THIS GROUP  
CONSISTED OF GARBLED SPEECH SIGNALS. (D) TWO  
PRACTICE CONDITIONS WHICH DID NOT EMPLOY AN  
INTERPHONE SYSTEM PRODUCED SLIGHTLY GREATER GAINS  
THAN THE SEVERE NOISE CONDITION, BUT LESS THAN THE  
CONDITION PRESENTING A REDUCED LEVEL OF AIRPLANE  
NOISE (B). (E) EXPERIMENTAL SUBJECTS GAINED  
SUBSTANTIALLY MORE THAN CONTROL SUBJECTS WHO WERE  
GIVEN THE SAME TESTS AFTER PRELIMINARY INDOCTRINATION  
IN USE OF EQUIPMENT. THE MOST SEVERE CONDITION WAS  
DESIGNED TO APPROXIMATE CONDITIONS WIDELY USED FOR  
TRAINING AIRCREW MEMBERS IN VOICE COMMUNICATION (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 638 491 20/1 5/10  
NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER ATLANTIC  
CITY N J

DISCUSSION OF THE UTILITY OF AVAILABLE TECHNIQUES FOR  
MEASURING AIRCRAFT NOISE AND PREDICTING COMMUNITY  
RESPONSE. (U)

DESCRIPTIVE NOTE: FINAL REPT.  
MAY 66 20P GREEN, THOMAS H. ;  
PROJ: 430-001-01R,  
MONITOR: SRDS RD-66-31

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AIRCRAFT NOISE, MEASUREMENT),  
(\*PSYCHOACOUSTICS, AIRCRAFT NOISE),  
REACTION(PSYCHOLOGY), JET ENGINE NOISE, URBAN PLANNING,  
AIRPORTS (U)

PERCEIVED NOISE LEVEL (PNDB), A TECHNIQUE  
FOR MEASURING AIRCRAFT NOISE, IS CALCULATED FROM  
MEASURED NOISE LEVELS AND CORRELATES WELL WITH  
SUBJECTIVE JUDGMENTS IN TERMS OF ANNOYANCE AND  
NOISINESS. THE DISCUSSION CONSIDERS THE EFFECTS OF  
PHYSICAL LAWS AND ENVIRONMENTAL FACTORS WHICH  
ATTENUATE, BOTH PREDICTABLY AND VARIABLY, THE SOUND  
PRESSURES REACHING THE GROUND. THE EFFECTS OF  
PSYCHOLOGICAL FACTORS WHICH INFLUENCE SUBJECTIVE  
JUDGMENTS ARE ALSO DISCUSSED. IT IS SUGGESTED THE  
EFFECT OF THESE FACTORS IS SUCH THAT PERCEIVED  
NOISE LEVEL IS OF USEABLE PRECISION AND  
ADDITIONAL REFINEMENT WOULD BE SUPERFLUOUS. THE  
PROCEDURE FOR PREDICTING COMMUNITY RESPONSE TO  
AIRPORT OPERATIONS USING COMPOSITE NOISE  
RATINGS IS DISCUSSED. ACTUAL MEASUREMENT OF  
AIRCRAFT NOISE IS NOT REQUIRED. NOISE CONTOURS OF  
AIRCRAFT OPERATIONS EXIST, AND THESE ARE USED IN  
CONJUNCTION WITH AIRPORT OPERATIONS DATA IN A  
SIMPLIFIED PROCEDURE TO DERIVE A PREDICTION OF  
COMMUNITY RESPONSE. IN AN EFFORT TO IMPROVE THE  
SENSITIVITY OF THE PREDICTION PROCESS TO LOCAL  
CONDITIONS, A SEPARATE STUDY WAS MADE OF THE  
DECISION-MAKING PROCESS ON THE MUNICIPAL LEVEL. A  
DEFINITIVE PATTERN COULD NOT BE DISCERNED AND IT WAS  
CONCLUDED THE EXISTING PREDICTIVE PROCEDURE CANNOT BE  
MADE MORE SENSITIVE TO COMMUNITY REACTION AT THIS  
TIME. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 639 363 6/19 6/10 20/1  
PSYCHOLOGICAL CORP NEW YORK

THE EFFECTS OF ULTRASONIC VIBRATIONS ON MAN. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

APR 48 43P

CONTRACT: N60RI-151(01),

MONITOR: NAVTRADEVCE 151-1-15

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ULTRASONIC RADIATION,  
TOLERANCES(PHYSIOLOGY)), SUPERSONIC AIRCRAFT, PILOTS,  
VIBRATION, PERFORMANCE(HUMAN), ACOUSTICS, INTENSITY, JET  
ENGINE NOISE, REVIEWS (U)

CONTRADICTIONARY REPORTS ARE CITED ABOUT BIOLOGICAL AND PSYCHOLOGICAL EFFECTS OF EXPOSURE TO JET ENGINES, TO DEFICES USED TO PRODUCE ULTRASONIC VIBRATIONS EXPERIMENTALLY, AND OF PARTICIPATION IN HIGH SPEED FLIGHT. THE EFFECTS UPON MAN ARE ALLEGED TO INVOLVE NAUSEA, DISTURBANCE OF EQUILIBRIUM, FATIGUE, MENTAL CONFUSION, HEADACHE, AND AUDITORY, VISUAL, AND MOTOR DISTURBANCES. THE EFFECTS ARE SAID TO BE TRANSIENT. DISTURBANCES OF EQUILIBRATION, FATIGUE, AND CONFUSION ARE THE MOST FREQUENTLY REPORTED SYMPTOMS. THESE DELETERIOUS EFFECTS ARE ATTRIBUTED TO ULTRASONIC VIBRATIONS. THE LOGIC BY WHICH ULTRASONIC VIBRATIONS BECOME THE CAUSE IS UNCLER IN MANY OF THE REPORTS. EFFECTS OF ULTRASONIC ENERGY WHEN APPLIED LOCALLY TO MAN ARE CONSIDERED. IN GENERAL, HEAT DEVELOPS AT THE SITE OF APPLICATION AND APPROPRIATE SENSORY STIMULATION RESULTS. SPECTRAL ANALYSES OF THE NOISE OBTAINED NEAR TURBO-JET ENGINES ON THE GROUND OR AIRCRAFT IN FLIGHT SHOW THAT BOTH SONIC AND ULTRASONIC VIBRATIONS ARE PRODUCED. UNDER THE CONDITIONS STUDIED, SONIC COMPONENTS EXCEED THE ULTRASONIC COMPONENTS IN INTENSITY. INTENSITY LEVELS APPEAR TO BE REDUCED AS ENGINE SPEED DECREASES. THERE IS EVIDENCE THAT, WITH INCREASING AIR SPEED, THE OVERALL INTENSITY LEVEL OF THE NOISE INCREASES AND STRONG ENERGY COMPONENTS MAY APPEAR AT ULTRASONIC FREQUENCIES AS WELL AS IN THE AUDIBLE RANGE. ACCORDING TO ONE STUDY, THIS TENDENCY IS EXAGGERATED AS THE SPEED APPROACHES A MACH NUMBER OF 1.0. IF IT IS ESTABLISHED THAT EXPOSURE TO VIBRATIONS FROM CURRENT TYPE ENGINES OR AIRCRAFT IS HARMFUL,

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 645 955 20/1 1/5  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

ANALYSIS OF COMMUNITY AND AIRPORT RELATIONSHIPS/NOISE  
ABATEMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON SEVEN PARTS.

DEC 65 356P  
CONTRACT: FA-WA-4409  
PROJ: 430-001-01R  
MONITOR: FAA-RD 65-130

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, PUBLIC OPINION),  
(\*AIRPORTS, NOISE), ACCEPTABILITY, DECISION MAKING,  
TAKEOFF, ATMOSPHERES, SOUND TRANSMISSION (U)

CONTENTS: PREDICTING COMMUNITY RESPONSE TO  
AIRCRAFT NOISE; JUDGMENTS OF THE RELATIVE AND  
ABSOLUTE ACCEPTABILITY OF ACTUAL AND RECORDED  
AIRCRAFT NOISE; AN ANALYSIS OF SOME FACTORS  
AFFECTING COMMUNITY-AIRPORT DECISION-MAKING; THE  
REDUCTION OF AIRCRAFT NOISE MEASURED IN SEVERAL  
SCHOOLS, MOTEL AND RESIDENTIAL ROOMS; COMPUTER-  
AIDED STUDY OF TIME PATTERNS OF NOISE FROM JET  
AIRCRAFT TAKEOFFS; A STUDY OF AIRCRAFT FLYOVER  
NOISE VARIATIONS DUE TO CHANGES IN FLIGHT PATHS AND  
ATMOSPHERIC SOUND TRANSMISSION CHARACTERISTICS;  
APPLICATIONS OF METHODS FOR RATING LAND USE  
COMPATIBILITY WITH AIRCRAFT NOISE. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 646 025 20/1 5/10  
BOLT BERANFK AND NEWMAN INC VAN NUYS CALIF

THE EFFECTS OF DURATION AND BACKGROUND NOISE LEVEL ON  
PERCEIVED NOISEINESS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 66 58P PEARSONS, KARL S. ;  
CONTRACT: FA-65-WA-1180  
MONITOR: FAA-ADS 78

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, BACKGROUND), (\*NOISE,  
ACCEPTABILITY), TESTS, REACTION(PSYCHOLOGY),  
PERCEPTION(PSYCHOLOGY), ANECHOIC CHAMBERS (U)

JUDGMENT TESTS WERE CONDUCTED TO INVESTIGATE THE  
EFFECT OF DURATION AND BACKGROUND NOISE ON THE  
PERCEIVED NOISINESS OF SOUNDS. THE TESTS WERE  
CONDUCTED IN AN ANECHOIC CHAMBER WITH 18 SUBJECTS.  
AIRCRAFT NOISE RECORDINGS WERE EMPLOYED IN THE  
BACKGROUND LEVEL TEST, AND THE RESULTS INDICATE THAT  
THE PRESENCE OF BACKGROUND NOISE REDUCES THE JUDGED  
NOISINESS OF AN AIRCRAFT FLYOVER. THE DURATION  
TESTS UTILIZED STIMULI WITH TWO DIFFERENT TIME  
PATTERNS AND VARIOUS SPECTRUM SHAPES OVER A RANGE OF  
DURATIONS FROM 4 TO 64 SECONDS. COMBINING THE  
RESULTS OF THESE TESTS WITH THOSE OF A PREVIOUS STUDY  
PROVIDED DURATION INFORMATION OVER THE RANGE FROM 1-  
1/2 TO 64 SECONDS. THESE DATA SUGGEST THAT THE  
DEPENDENCE OF PERCEIVED NOISINESS ON DURATION MIGHT  
WELL BE A FUNCTION WITH A CONTINUOUSLY DECREASING  
SLOPE, VARYING FROM -6 TO -2 PNDB PER DOUBLING OF  
DURATION OVER THE RANGE OF DURATIONS TESTED. FOR  
PRACTICAL PURPOSES, WE HAVE APPROXIMATED THE DATA BY  
STRAIGHT-LINE SEGMENTS FOR VARIOUS RANGES OF  
DURATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 646 775 6/10  
MASSACHUSETTS INST OF TECH CAMBRIDGE

THE RELATIONS OF HEARING LOSS TO NOISE EXPOSURE. (U)

54 64P  
CONTRACT: N50RI-078(61)

UNCLASSIFIED REPORT

AVAILABILITY: ALL REQUESTS TO STANDARDS  
ASSOCIATION, INC., 70 E, 45TH ST., NEW YORK 17,  
N. Y. PRICE \$1.50.

DESCRIPTORS: (\*NOISE, \*HEARING), (\*INDUSTRIAL MEDICINE,  
NOISE), DEAFNESS, THRESHOLDS(PHYSIOLOGY),  
EXPOSURE(PHYSIOLOGY), LOW FREQUENCY, AIRCRAFT NOISE, JET  
ENGINE NOISE, AUDIOMETRY, TOLERANCES(PHYSIOLOGY),  
STANDARDS (U)

CONTENTS: DEFINITION OF VARIABLES: HEARING  
LOSS, NOISE, EXPOSURE; THE HUMAN PROBLEMS OF  
INDUSTRIAL NOISE; PRESBYCUSIS; REQUIREMENTS  
FOR FIELD DATA; CONTINUOUS EXPOSURE TO  
STEADY NOISE; THE RELATION OF HEARING  
LOSS AT CERTAIN FREQUENCIES TO OCTAVE BAND  
LEVELS; AVERAGE NET HEARING LOSS  
CONTOURS; TREND CURVES; ESTIMATES OF  
AVERAGE NET HEARING LOSS; CONFIRMATION OF  
THE TREND CURVES; LIMITATIONS OF TREND  
CURVES; SPECTRA AND EXTRAPOLATIONS;  
LIMITATIONS OF TREND CURVES; INTERMITTENT  
EXPOSURE AND NON-STEADY NOISE; LIMITATIONS  
OF TREND CURVES; TEMPORARY THRESHOLD SHIFT;  
REDUCTION IN TEMPORARY THRESHOLD SHIFT AFTER  
CESSATION OF EXPOSURE; EXPOSURE TO LOW-  
FREQUENCY NOISE; GROSS HEARING LOSSES IN  
THREE HYPOTHETICAL GROUPS; INTERMITTENT  
EXPOSURE TO STEADY NOISE; AIRPLANE NOISE;  
JET-ENGINE NOISE; INTERMITTENT EXPOSURE;  
RIVETING NOISE; IMPULSIVE NOISE; PROOF-  
FIRING; IMPACT NOISE; DROP FORGE; RELATION  
OF THRESHOLD SHIFTS TO INITIAL  
AUDIOGRAMS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 647 393 1/2 1/5 5/3  
SYSTEMS ANALYSIS AND RESEARCH CORP BOSTON MASS

AIR TRAFFIC GROWTH, AIRLINE FINANCES, AND PUBLIC  
BENEFITS IN RELATION TO THE COST OF NEW PROGRAMS TO  
ALLEVIATE JET AIRCRAFT NOISE NEAR AIRPORTS. (U)

JAN 67 135P  
REPT. NO. XG-489-67  
CONTRACT: FA-67-WA-1656

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, AIRPORTS), (\*AIRPORTS,  
CIVIL AVIATION), AIR TRAFFIC, COSTS, JET TRANSPORT  
PLANES, AIR TRANSPORTATION, JET ENGINE NOISE, ECONOMICS,  
TURBOPROP ENGINES (U)

EFFECTIVE NEW PROGRAMS FOR COPING WITH AIRCRAFT  
NOISE PROBLEMS AROUND AIRPORTS WILL PROBABLY INVOLVE  
NEW EXPENDITURES. IF SUCH COSTS ARE PASSED ON TO  
AIRLINE TRAFFIC, THEY WILL AFFECT TRAFFIC GROWTH  
THROUGH PRICE ELASTICITY OF DEMAND. A 1-PERCENT  
INCREASE IN FARES AND RATES IS ESTIMATED TO DECREASE  
TRAFFIC BY 1.3 PERCENT; A 5-PERCENT INCREASE WOULD  
REDUCE TRAFFIC BY 6.3 PERCENT. SEPARATE  
ELASTICITIES ARE ESTIMATED BY MAJOR AIRLINE GROUPS:  
-1.28 FOR DOMESTIC TRUNKLINE PASSENGERS, -1.6 FOR  
INTERNATIONAL PASSENGERS, -1.0 FOR LOCAL SERVICE  
PASSENGERS, AND -1.5 FOR CARGO TRAFFIC. THE  
AIRLINES APPEAR TO HAVE A COMFORTABLE FINANCIAL  
FUTURE TO COVER ALL EXPENSES AND A FAIR RETURN ON  
INVESTMENT, BUT NOT SUFFICIENT TO PAY LARGE  
ADDITIONAL EXPENSES OUT OF FORECAST REVENUES WITHOUT  
RAISING THEIR FARE AND RATE LEVELS. THE DIRECT  
BENEFICIARIES OF AIR TRANSPORTATION -- PASSENGERS AND  
SHIPPERS -- ARE THE LOGICAL PERSONS TO PAY FOR NOISE  
PROGRAMS, THROUGH THE PRICING SYSTEM OF AIRLINES AND  
THE COSTS OF GENERAL AVIATION FLYING. (U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 648 503            6/16            20/1            6/5  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

NOISINESS JUDGMENTS OF HELICOPTER FLYOVERS.            (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JAN 65    38P    PEARSONS, KARL S. ;  
CONTRACT: FA-65-WA-1260  
MONITOR: FAA    DS-67-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, HELICOPTERS),  
(\*THRESHOLDS(PHYSIOLOGY), AIRCRAFT NOISE), HEARING,  
AUDIOMETRY, ACCEPTABILITY, AUDITORY PERCEPTION, JET  
PLANE NOISE, TESTS            (U)

JUDGMENT TESTS WERE CONDUCTED IN WHICH 21 COLLEGE  
STUDENTS JUDGED THE NOISINESS OR UNWANTEDNESS OF  
EIGHT RECORDED HELICOPTER FLYOVER NOISES VS A JET  
TRANSPORT FLYOVER NOISE AND A SHAPED BAND OF NOISE.  
TESTS WERE CONDUCTED IN AN ANECHOIC CHAMBER USING  
MAINLY THE METHOD OF PAIRED COMPARISONS. THESE  
JUDGMENT TESTS INDICATE THAT THE CALCULATED PERCEIVED  
NOISE LEVEL IS THE BEST PREDICTOR OF NOISINESS,  
FOLLOWED CLOSELY BY THE N-WEIGHTED SOUND PRESSURE  
LEVEL AND THE A-WEIGHTED SOUND PRESSURE LEVEL, AND  
FINALLY, THE OVERALL SOUND PRESSURE LEVEL.  
DURATION AND PURE-TONE CORRECTIONS APPLIED TO THE  
CALCULATED PERCEIVED NOISE LEVEL DID NOT IMPROVE THE  
PREDICTION ACCURACY OF THIS MEASURE. (AUTHOR)            (U)



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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 648 748            1/5            5/3  
CALIFORNIA UNIV BERKELEY INST OF TRANSPORTATION AND  
TRAFFIC ENGINEERING

ALLOCATING THE COSTS OF ALLEVIATING SUBSONIC JET  
AIRCRAFT NOISE. (U)

DESCRIPTIVE NOTE: SPECIAL REPT.,  
FEB 67    27P            DYGERT, PAUL K. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*NOISE, \*JET AIRCRAFT), (\*COSTS, NOISE),  
AIR TRANSPORTATION, AIRPORTS, URBAN AREAS, UNITED STATES  
GOVERNMENT, MONEY, TRANSPORTATION (U)

THE PROBLEM OF AIRCRAFT NOISE AROUND AIRPORTS  
CONTAINS TWO PRINCIPAL ELEMENTS: (1) QUIET JET  
AIRCRAFT ARE AND WILL REMAIN (BARRING MAJOR  
PROGRESS IN AIRFRAME AND ENGINE TECHNOLOGY)  
PROHIBITIVELY INEFFICIENT IN TERMS OF PAYLOAD AND  
REVENUE-GENERATING CAPACITY; (2) JET AIRPORTS  
ARE AND WILL REMAIN (BARRING CHANGES IN LAND-USE  
AND TRANSPORTATION PLANNING) CENTERS OF ECONOMIC  
ACTIVITY, INCLUDING DENSE RESIDENTIAL DEVELOPMENT.  
CONFLICTS IN PUBLIC POLICY ALSO APPEAR TO HAVE  
CONTRIBUTED TO THE NOISE PROBLEM. ON THE ONE HAND,  
IT IS IN THE PUBLIC INTEREST TO KEEP NOISE AT AS LOW  
A LEVEL AS POSSIBLE; ON THE OTHER HAND, AIRCRAFT  
BECOME TECHNICALLY LESS EFFICIENT AND MORE COSTLY AS  
THEY ARE MADE QUIETER. PUBLIC POLICY ENCOURAGES  
BOTH A QUIET SOCIETY AND THE DEVELOPMENT OF MORE  
EFFICIENT AIR TRANSPORTATION. FINALLY, UNDER U.  
S. TRANSPORTATION POLICY, AIRLINES ARE PRIVATE  
ENTERPRISES, FREE TO MAKE THEIR OWN BUSINESS  
DECISIONS WITHIN ECONOMIC AND SAFETY CONSTRAINTS.  
SINCE THE AIR CARRIERS DO NOT PAY THE COSTS OF  
AIRCRAFT NOISE, THEY TEND TO IGNORE THESE COSTS IN  
MAKING BUSINESS DECISIONS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 650 267 1/5 13/2  
TRANSPORTATION CONSULTANTS INC WASHINGTON D C

COMPATIBLE LAND USE PLANNING ON AND AROUND  
AIRPORTS.

(U)

JUN 66 127P  
CONTRACT: FA-65-WA-1357

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-650 271.

DESCRIPTORS: (\*AIRPORTS, \*URBAN PLANNING), (\*URBAN  
AREAS, \*AIRCRAFT NOISE), HAZARDS, MANAGEMENT  
ENGINEERING, SAFETY, RUNWAYS, TAKEOFF, LANDING,  
BUILDINGS, AIR TRAFFIC

(U)

DATA REPORTED WERE OBTAINED FROM OPERATIONS AT 120  
AIRPORTS IN THE U.S. AND CANADA. AN  
EXAMINATION OF PRESENT AND PAST EXPERIENCE WITH NOISE  
PROBLEMS AT MANY OF THESE AIRPORTS CAN BE BENEFICIAL  
TO OTHER AIRPORTS IN AVOIDING OR CORRECTING THE SAME  
TYPE OF PROBLEM. THE FOLLOWING POINTS ARE  
DISCUSSED: SUMMARY OF COMPATIBLE AND INCOMPATIBLE  
LAND USES ON OR AROUND AIRPORTS; THE NOISE PROBLEM;  
THE NOISE AND HAZARD PROBLEM IN AIRPORT PLANNING;  
IDENTIFICATION OF NOISE AREAS AND OBSTRUCTIONS IN  
AIRPORT PLANNING; AND TABULATION OF LAND USES.  
NAMES AND ADDRESSES OF AIRPORT EXECUTIVES AND  
PLANNERS PARTICIPATING IN THE LAND USE EVALUATION  
SURVEY ARE ALSO PROVIDED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 650 271 1/5 13/2  
TRANSPORTATION CONSULTANTS INC WASHINGTON D C

AIDS AVAILABLE FOR COMPATIBLE LAND USE PLANNING  
AROUND AIRPORTS. (U)

JUN 66 101P  
CONTRACT: FA-65-WA-1357

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-650 267.

DESCRIPTORS: (\*AIRPORTS, PROBLEM SOLVING), (\*URBAN  
PLANNING, UNITED STATES GOVERNMENT), URBAN AREAS,  
ENVIRONMENT, HAZARDS, AIRCRAFT NOISE, MANAGEMENT  
ENGINEERING, COSTS, HOUSING(DWELLINGS), FEDERAL BUDGE(U)

EACH AND EVERY AIRPORT, AND ITS ENVIRONS, IS  
DIFFERENT FROM EVERY OTHER AIRPORT, AND MUST BE  
CONSIDERED INDIVIDUALLY IN SOLVING ITS PROBLEMS OF  
INCOMPATIBLE LAND USES, OR IN PROVIDING FOR  
COMPATIBLE LAND USES IN THE AIRPORT AREA. THE  
GOVERNMENT AND OTHER AIDS SET FORTH IN THIS REPORT AS  
MEANS OF REGULATING LAND USES AROUND AIRPORTS WILL  
PROVIDE THE GREATEST BENEFIT TO THE COMMUNITY AS A  
WHOLE WHEN THEY ARE USED IN CONJUNCTION WITH  
COMPREHENSIVE PLANNING FOR THE DEVELOPMENT OF THE  
COMMUNITY. THE PRESENT MODEL STATE AIRPORT  
ZONING ENABLING ACT CONSIDERS ONLY 'AIRPORT  
HAZARD AREAS' AND DOES NOT PROVIDE FOR CONSIDERATION  
OF 'INCOMPATIBLE LAND USE AREAS' OR AIRCRAFT NOISE  
AND OTHER AIRCRAFT-INDUCED OPERATIONAL PROBLEMS.  
THERE IS A NEED FOR THE DEVELOPMENT OF MODEL  
HOUSING AND BUILDING CODES THAT SPECIFY NOISE  
CONSTRUCTION STANDARDS FOR BUILDINGS IN AIRPORT  
ENVIRONS. SUCH CODES COULD BE MADE PART OF ZONING  
REGULATIONS AROUND AIRPORTS. (U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 654 927            20/1            1/2  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

FREQUENCY SPECTRUM AND TIME DURATION DESCRIPTIONS OF  
AIRCRAFT FLYOVER NOISE SIGNALS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 67 96P            BISHOP, DWIGHT E. I  
REPT. NO.    BPN-1507  
CONTRACT:    FA-65-WA-1260  
MONITOR:    FAA-ADS            67-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, ACOUSTIC PROPERTIES),  
ACOUSTIC SIGNALS, JET TRANSPORT PLANES, AUDITORY  
PERCEPTION, FREQUENCY, TIME, MAGNETIC TAPE,  
ACCEPTABILITY (U)

THIRTY-TWO FLYOVER NOISE RECORDINGS WERE ANALYZED  
AND COMPARED WITH RESPECT TO CHARACTERISTICS  
CURRENTLY USED TO ASSESS THE NOISINESS OF THE FLYOVER  
SIGNAL--MAXIMUM LEVELS, DURATION, AND PRESENCE OF  
DISCRETE FREQUENCY COMPONENTS. THE RECORDINGS  
INCLUDED TAKEOFF AND LANDING SIGNALS OF MOST MAJOR  
TYPES OF COMMERCIAL JET TRANSPORT AIRCRAFT.  
COMPARISONS ARE MADE OF THE CALCULATED PERCEIVED  
NOISE LEVELS BASED ON MAXIMUM OCTAVE AND ONE-THIRD  
OCTAVE BAND MEASUREMENTS AND ON ONE-THIRD OCTAVE BAND  
NOISE LEVELS MEASURED AT THE TIME THE N-WEIGHTED  
SOUND LEVEL REACHED A MAXIMUM. THE TIME DURATIONS  
OBTAINED FROM OVERALL SOUND PRESSURE LEVEL,  
CALCULATED PERCEIVED NOISE LEVEL, N-WEIGHTED AND  
A-WEIGHTED TIME HISTORIES ARE COMPARED.  
CORRECTIONS TO THE CALCULATED PERCEIVED NOISE  
LEVELS FOR THE PRESENCE OF DISCRETE FREQUENCY  
COMPONENTS AS CALCULATED BY TWO PROCEDURES ARE ALSO  
COMPARED. BASIC FLYOVER NOISE SIGNAL  
CHARACTERISTICS AND DATA REDUCTION CRITERIA,  
TECHNIQUES AND LIMITATIONS ARE ALSO DISCUSSED.  
(AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 657 633 20/1 1/2 5/10  
BOLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

DESCRIPTIONS OF FLYOVER NOISE SIGNALS PRODUCED BY  
VARIOUS JET TRANSPORT AIRCRAFT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 67 67P BISHOP, DWIGHT E. ;  
CONTRACT: FA-65-WA-1260  
MONITOR: FAA-DS 67-18

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, ACOUSTIC SIGNALS),  
(\*ACOUSTIC SIGNALS, AUDITORY PERCEPTION), SPECTROSCOPY,  
FREQUENCY, MEASUREMENT, TRANSPORT AIRCRAFT, MATHEMATICAL  
ANALYSIS (U)

THE REPORT PROVIDES DESCRIPTIONS OF MAXIMUM LEVELS  
AND TIME DURATIONS FOR 45 FLYOVER NOISE SIGNALS  
PRODUCED BY A VARIETY OF TURBOJET AND TURBOFAN  
TRANSPORT AIRCRAFT IN CURRENT AIRLINE SERVICE. THE  
DESCRIPTIONS ARE BASED UPON ONE-THIRD OCTAVE BAND  
NOISE SPECTRA DETERMINED AT ONE-HALF SECOND INTERVALS  
THROUGHOUT THE FLYOVER TIME HISTORIES. COMPARISONS  
ARE PROVIDED BETWEEN INTEGRATED PERCEIVED NOISE  
LEVELS, EFFECTIVE PERCEIVED NOISE LEVELS, PERCEIVED  
NOISE LEVELS CALCULATED FROM THE MAXIMUM THIRD-OCTAVE  
BAND NOISE LEVELS OCCURRING DURING THE FLYOVER AND  
N-WEIGHTED NOISE LEVELS. COMPARISON OF VARIOUS  
DURATION MEASUREMENTS AND CORRECTIONS ARE ALSO  
PRESENTED FOR DURATIONS MEASURED AT LEVELS OF 10 DB  
AND 20 DB DOWN FROM THE MAXIMUM FLYOVER LEVELS.  
COMPARISONS INDICATE HIGH CORRELATION AMONG MANY OF  
THE DIFFERENT MEASURES DESCRIBING MAXIMUM NOISE  
LEVELS AND DURATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 658 448 20/1 1/2 1/3  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

EVALUATION OF NOISE PROBLEMS ANTICIPATED WITH FUTURE  
VTOL AIRCRAFT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 67 24P COLE, JOHN N. ; ENGLAND,  
ROBERT T. ;  
REPT. NO. AMRL-TR-66-245  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

DESCRIPTORS: (\*VERTICAL TAKEOFF AIRCRAFT, NOISE),  
(\*AIRPLANE ENGINE NOISE, VERTICAL TAKEOFF AIRCRAFT),  
PROPULSION SYSTEMS, TAKEOFF, AIRCRAFT LANDINGS,  
AIRPORTS, DETECTION, DESIGN (U)  
IDENTIFIERS: EVALUATION (U)

THE POTENTIAL NOISE PROBLEMS ANTICIPATED WITH  
FUTURE VTOL AIRCRAFT ARE ANALYZED AND DISCUSSED IN  
GENERAL TERMS, AND A BRIEF REVIEW OF THE BASIC  
PRINCIPLES OF NOISE GENERATION OF VARIOUS TYPES OF  
PROPULSION SYSTEMS PROPOSED FOR VTOL IS INCLUDED.  
PRIMARY CONSIDERATION IS GIVEN TO THE NOISE  
ENVIRONMENTS PRODUCED IN AREAS ADJACENT TO VTOL  
SITES, SINCE THEY COULD CAUSE THE MOST SERIOUS NOISE  
PROBLEM LIMITING THE USEFULNESS OF VTOL AIRCRAFT.  
CONTOURS OF PERCEIVED NOISE LEVELS ARE COMPARED FOR  
DIFFERENT TAKEOFF AND LANDING PROFILES OF 3-4  
PASSENGER, 60 PASSENGER, AND 25 TON-LIFT-CRANE VTOL  
AIRCRAFT. CRITERIA AND METHODS FOR ASSESSING THE  
RESPONSE OF COMMUNITIES TO NOISE FROM V-PORT  
OPERATIONS ARE DISCUSSED ALONG WITH THE PROBLEM OF  
DETECTION OF MILITARY VTOL AIRCRAFT BY MEANS OF  
NOISE. RECOMMENDATIONS ARE GIVEN ON THE  
REQUIREMENTS FOR FUTURE RESEARCH ON THESE NOISE  
PROBLEMS WITH EMPHASIS ON THE NEED FOR CONSIDERING  
NOISE AS AN INTEGRAL PART OF THE DESIGN, SELECTION,  
AND TEST OF VTOL AIRCRAFT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 658 755 5/10 20/1  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

CATEGORY SCALING JUDGMENT TESTS ON MOTOR VEHICLE AND  
AIRCRAFT NOISE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 67 115P PEARSONS, KARL S. ; HORONJEFF,  
RICHARD D. ;  
REPT. NO. BRN-1516  
CONTRACT: FA-65-WA-1260  
MONITOR: FAA-DS 67-8

UNCLASSIFIED REPORT

DESCRIPTORS: (\*NOISE, \*PSYCHOLOGICAL TESTS), AIRCRAFT  
NOISE, VEHICLES, ENGINE NOISE, PERCEPTION (PSYCHOLOGY),  
ACCEPTABILITY (U)

SUBJECTS WERE ASKED TO RATE ON VARIOUS ADJECTIVE  
CATEGORY SCALES THE SOUNDS PRODUCED BY AIRCRAFT  
FLYOVERS AND MOTOR VEHICLE DRIVERS. RECORDED  
SOUNDS WERE RATED BY COLLEGE STUDENTS AND COMMUNITY  
RESIDENTS AT LOCATIONS NEAR A HIGHWAY AND TWO  
AIRPORTS. THE LABORATORY TESTS INDICATED THAT ALL  
OF THE CATEGORY SCALES WERE SIMILAR IN THEIR  
RELATIONSHIP WITH ACOUSTICAL MEASURES, ALTHOUGH, IN  
GENERAL, THE NOISINESS SCALE EXHIBITED THE HIGHEST  
CORRELATION. THE CORRELATIONS BETWEEN THE  
NOISINESS SCALE AND VARIOUS ACOUSTICAL MEASURES FOR  
THE LABORATORY AND FIELD TESTS WERE ALL ABOUT EQUAL,  
WITH PERCEIVED NOISE LEVEL, CALCULATED OR ESTIMATED  
FROM N-LEVEL MEASUREMENTS, EXHIBITING THE HIGHEST  
CORRELATION, FOLLOWED BY LOUDNESS LEVEL AND A-  
LEVEL. THE LOWEST CORRELATION WAS EXHIBITED BY  
OVERALL SOUND PRESSURE LEVEL. BOTH THE LABORATORY  
AND FIELD RESULTS WERE IN GOOD AGREEMENT AND  
INDICATED LITTLE DIFFERENCE IN RATINGS VS LEVEL AMONG  
VARIOUS SOUND STIMULI EMPLOYED DURING THE TESTS.  
AGREEMENT WAS GOOD WITH THE RESULTS OF OTHER  
INVESTIGATORS AT THE HIGHEST LEVELS, DIVERGING AT THE  
MORE MODERATE LEVELS. THESE COMPARISONS INDICATE  
THE INFLUENCE OF STIMULUS RANGE ON THE MAGNITUDE AND  
SLOPE OF THE RELATIONSHIP BETWEEN THE SUBJECTIVE  
RATING VS A PHYSICAL NOISE MEASURE. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 660 702 20/1 1/5  
SOCIETY OF AUTOMOTIVE ENGINEERS INC NEW YORK

NOISE EXPOSURE FORECASTS FOR LOS ANGELES  
INTERNATIONAL AIRPORT.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

AUG 67 13P  
CONTRACT: FA-67-WA-1706  
MONITOR: FAA-ADS 67-17

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON 'TECHNIQUE FOR DEVELOPING  
NOISE EXPOSURE FORECASTS'. SEE ALSO AD-660  
705.

DESCRIPTORS: (\*AIRCRAFT NOISE, AIRPORTS), (\*JET ENGINE  
NOISE, \*AIRPORTS), AIRCRAFT LANDINGS, FLIGHT PATHS,  
RUNWAYS, JET AIRCRAFT, EXPOSURE(PHYSIOLOGY), TRANSPORT  
AIRCRAFT, PERIODIC VARIATIONS, COMPUTER PROGRAMS,  
MEASUREMENT, MAPS, TABLES(DATA), CALIFORNIA (U)

THE GENERAL PROCEDURES USED IN PLOTTING THE NEF  
CONTOURS FOR THE LOS ANGELES INTERNATIONAL  
AIRPORT VICINITY ARE DESCRIBED AND THE COMPUTER  
PROGRAM USED IS DESCRIBED IN APPENDIX F1 OF THE  
REPORT TO WHICH THIS IS A SUPPLEMENT. THE INPUT  
DATA ON WHICH THESE NEF CONTOURS ARE BASED HAVE  
BEEN PROVIDED FROM SEVERAL SOURCES AS FOLLOWS:  
AIRPORT OPERATIONS DATA WERE SUPPLIED BY THE FAA;  
(NUMBER OF OPERATIONS, TYPE OF AIRCRAFT, FLIGHT  
PATH, TIME OF DAY, RUNWAY UTILIZATION). AIRCRAFT  
PERFORMANCE DATA WERE SUPPLIED BY THE AIRCRAFT  
MANUFACTURERS. AIRCRAFT GROSS WEIGHT DISTRIBUTION  
BY AIRCRAFT TYPE FOR OPERATIONS FROM LOS ANGELES  
INTERNATIONAL WERE SUPPLIED BY THE AIRLINES. THE  
PROCEDURE FOR COMPUTING NEF CONTOURS WAS DEVELOPED  
AND APPROVED BY SAE COMMITTEE R2.5. THE  
COMPUTING AND PLOTTING WORK WAS ACCOMPLISHED BY THE  
AIRCRAFT MANUFACTURERS. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 660 703 20/1 1/5  
SOCIETY OF AUTOMOTIVE ENGINEERS INC NEW YORK

NOISE EXPOSURE FORECASTS FOR J. F. KENNEDY  
INTERNATIONAL AIRPORT.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

AUG 67 12P

CONTRACT: FA-67-WA-1706

MONITOR: FAA-ADS 67-15

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON 'TECHNIQUE FOR DEVELOPING  
NOISE EXPOSURE FORECASTS'. SEE ALSO AD-660  
702.

DESCRIPTORS: (\*AIRCRAFT NOISE, AIRPORTS), (\*JET ENGINE  
NOISE, \*AIRPORTS), AIRCRAFT LANDINGS, FLIGHT PATHS,  
RUNWAYS, JET AIRCRAFT, EXPOSURE(PHYSIOLOGY), TRANSPORT  
AIRCRAFT, PERIODIC VARIATIONS, COMPUTER PROGRAMS,  
MEASUREMENT, MAPS, TABLES(DATA), NEW YORK

(U)

THE GENERAL PROCEDURES USED IN PLOTTING THE NEF  
CONTOURS FOR THE J. F. KENNEDY AIRPORT  
VICINITY ARE DESCRIBED AND THE COMPUTER PROGRAM USED  
IS DESCRIBED IN APPENDIX F1 OF THE REPORT TO  
WHICH THIS IS A SUPPLEMENT. THE INPUT DATA ON  
WHICH THESE NEF CONTOURS ARE BASED HAVE BEEN  
PROVIDED FROM SEVERAL SOURCES AS FOLLOWS:  
AIRPORT OPERATION DATA WERE SUPPLIED BY THE FAA;  
(NUMBER OF OPERATIONS, TYPE OF AIRCRAFT, FLIGHT  
PATH, TIME OF DAY, RUNWAY UTILIZATION). AIRCRAFT  
PERFORMANCE DATA WERE SUPPLIED BY THE AIRCRAFT  
MANUFACTURERS. AIRCRAFT GROSS WEIGHT DISTRIBUTION  
BY AIRCRAFT TYPE FOR OPERATIONS FROM JFK WERE  
SUPPLIED BY THE AIRLINES. THE PROCEDURE FOR  
COMPUTING NEF CONTOURS ARE DEVELOPED AND APPROVED  
BY SAE COMMITTEE R2.5. THE COMPUTING AND  
PLOTTING WORK WAS ACCOMPLISHED BY THE AIRCRAFT  
MANUFACTURERS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 660 704 20/1 1/5  
SOCIETY OF AUTOMOTIVE ENGINEERS INC NEW YORK

NOISE EXPOSURE FORECASTS FOR O'HARE INTERNATIONAL  
AIRPORT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

AUG 67 12P

CONTRACT: FA-67-WA-1706

MONITOR: FAA-ADS 67-16

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON 'TECHNIQUE FOR DEVELOPING  
NOISE EXPOSURE FORECASTS'. SEE ALSO AD-660  
703.

DESCRIPTORS: (\*AIRCRAFT NOISE, AIRPORTS), (\*JET ENGINE  
NOISE, \*AIRPORTS), AIRCRAFT LANDINGS, FLIGHT PATHS,  
RUNWAYS, JET AIRCRAFT, EXPOSURE (PHYSIOLOGY), TRANSPORT  
AIRCRAFT, PERIODIC VARIATIONS, COMPUTER PROGRAMS,  
MEASUREMENT, MAPS, TABLES (DATA), ILLINOIS (U)

THE GENERAL PROCEDURES USED IN PLOTTING THE NEF  
CONTOURS FOR THE O'HARE AIRPORT VICINITY ARE  
DESCRIBED AND THE COMPUTER PROGRAM USED IS DESCRIBED  
IN APPENDIX F1 OF THE REPORT TO WHICH THIS IS A  
SUPPLEMENT. THE INPUT DATA ON WHICH THESE NEF  
CONTOURS ARE BASED HAVE BEEN PROVIDED FROM SEVERAL  
SOURCES AS FOLLOWS: AIRPORT OPERATIONS DATA WERE  
SUPPLIED BY THE FAA; (NUMBER OF OPERATIONS, TYPE  
OF AIRCRAFT, FLIGHT PATH, TIME OF DAY, RUNWAY  
UTILIZATION). AIRCRAFT PERFORMANCE DATA WERE  
SUPPLIED BY THE AIRCRAFT MANUFACTURERS. AIRCRAFT  
GROSS WEIGHT DISTRIBUTION BY AIRCRAFT TYPE FOR  
OPERATIONS FROM O'HARE WERE SUPPLIED BY THE  
AIRLINES. THE PROCEDURE FOR COMPUTING NEF  
CONTOURS WAS DEVELOPED AND APPROVED BY SAE  
COMMITTEE R2.5. THE COMPUTING AND PLOTTING WORK  
WAS ACCOMPLISHED BY THE AIRCRAFT MANUFACTURERS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 660 705 20/1 1/5  
SOCIETY OF AUTOMOTIVE ENGINEERS INC NEW YORK

TECHNIQUE FOR DEVELOPING NOISE EXPOSURE  
FORECASTS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.

AUG 67 129P

CONTRACT: FA-67-WA-1706

MONITOR: FAA-ADS 67-14

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-660 704.

DESCRIPTORS: (\*AIRCRAFT NOISE, AIRPORTS), (\*JET ENGINE  
NOISE, \*AIRPORTS), AIRCRAFT LANDINGS, FLIGHT PATHS,  
RUNWAYS, JET AIRCRAFT, EXPOSURE(PHYSIOLOGY), TRANSPORT  
AIRCRAFT, PERIODIC VARIATIONS, COMPUTER PROGRAMS,  
MEASUREMENT, TABLES(DATA)

(U)

A METHODOLOGY CALLED NOISE EXPOSURE FORECASTS  
(NEF) IS DEVELOPED FOR DESCRIBING AIRCRAFT NOISE  
EXPOSURE IN THE VICINITY OF THE TAKEOFF AND APPROACH  
FLIGHT PATHS OF AN AIRPORT. IN SUPPORT OF THIS  
METHODOLOGY AN IMPROVED MEASURE OF THE SURJECTIVE  
RESPONSE TO AIRCRAFT FLYOVER NOISE CALLED EFFECTIVE  
PERCEIVED NOISE LEVEL (EPNL) HAS BEEN  
DERIVED. THIS MEASURE INCLUDES CORRECTIONS FOR  
PURE TONE COMPONENTS AND DURATION. OTHER ELEMENTS  
NECESSARY FOR THE CALCULATION OF NEF ARE NUMBER OF  
EXPOSURES AND TIME OF DAY. NEF CONTOUR ARE  
TRANSLATED INTO GUIDELINES FOR COMPATIBLE LAND USE.  
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 660 706            1/5            20/1            13/2  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

PROCEDURES FOR DEVELOPING NOISE EXPOSURE FORECAST  
AREAS FOR AIRCRAFT FLIGHT OPERATIONS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 67 62P            BISHOP, DWIGHT E. ; HORONJEFF,  
RICHARD D. ;  
REPT. NO. BRN-1511  
CONTRACT: FA-67-WA-1705  
MONITOR: FAA-ADS            67-10

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-660 708, AD-660 709,  
AD-660 710.

DESCRIPTORS: (\*AIRPORTS, \*URBAN AREAS), (\*URBAN  
PLANNING, \*JET ENGINE NOISE), AIR TRAFFIC, JET PLANE  
NOISE, PSYCHOACOUSTICS, FLIGHT PATHS, COMMERCIAL PLANES,  
TAKEOFF, LANDING (U)

THE REPORT OUTLINES PROCEDURES AND SUPPORTING  
TECHNICAL DATA FOR DETERMINING NOISE EXPOSURE  
FORECAST (NEF) AREA, RESULTING FROM TAKEOFF AND  
LANDING OPERATIONS IN THE VICINITY OF AIRPORTS. IN  
COMPANION REPORTS, THESE PROCEDURES HAVE BEEN APPLIED  
TO DETERMINE NEF AREAS IN THE VICINITY OF J. F.  
KENNEDY, O'HARE AND LOS ANGELES  
INTERNATIONAL AIRPORTS FOR 1965, 1970 AND 1975.  
THE NEF AREAS HAVE DIFFERING LAND USE  
COMPATIBILITY WITH RESPECT TO AIRCRAFT NOISE; HENCE,  
THE NEF AREAS MAY BE USED AS A GUIDE TO LAND USE  
PLANNING AND ZONING. THE NEF AREAS ARE BASED  
UPON THE AIRCRAFT NOISE DESCRIBED IN TERMS OF THE  
EFFECTIVE PERCEIVED NOISE LEVELS (WHICH INCLUDES  
CORRECTIONS FOR DURATION AND PRESENCE OF DISCRETE  
FREQUENCIES) PLUS ADJUSTMENTS FOR THE NUMBER OF  
OPERATIONS FOR DAYTIME AND NIGHTTIME PERIODS.  
NOISE AND TAKEOFF AND LANDING PROFILE INFORMATION  
IS GIVEN FOR ESTIMATING EFFECTIVE PERCEIVED NOISE  
LEVELS FOR THE TAKEOFF AND LANDINGS OF CURRENT LARGE  
JET AIRCRAFT AND FOR FUTURE LARGE AIRCRAFT EXPECTED  
TO BE IN OPERATION WITHIN THE FORECAST PERIODS.  
COMPUTER-AIDED PROCEDURES EMPLOYED IN DETERMINING  
NEF CONTOURS ARE ALSO OUTLINED. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 660 708 1/5 20/1 13/2  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

1965, 1970 AND 1975 NOISE EXPOSURE FORECAST AREAS FOR  
CHICAGO O'HARE INTERNATIONAL AIRPORT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 67 22P BISHOP, DWIGHT E. ; HORONJEFF,  
RICHARD D. ;  
REPT. NO. BBN-1509  
CONTRACT: FA-67-WA-1705  
MONITOR: FAA-ADS 67-12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON 'PROCEDURES FOR  
DEVELOPING NOISE EXPOSURE FORECAST AREAS FOR  
AIRCRAFT FLIGHT OPERATIONS.' SEE ALSO AD-660 706.

DESCRIPTORS: (\*AIRPORTS, \*URBAN AREAS), (\*URBAN  
PLANNING, \*JET ENGINE NOISE), AIR TRAFFIC, JET PLANE  
NOISE, FLIGHT PATHS, COMMERCIAL PLANES, TAKEOFF,  
LANDING, BUILDINGS, CONSTRUCTION, VOICE COMMUNICATION(U)

NOISE EXPOSURE FORECAST (NEF) AREAS RESULTING  
FROM TAKEOFF AND LANDING OPERATIONS AT CHICAGO  
O'HARE INTERNATIONAL AIRPORT ARE SHOWN FOR  
1965, 1970, AND 1975. THE NEF AREAS DEPICT AREAS  
OF DIFFERING LAND-USE COMPATIBILITY WITH RESPECT TO  
AIRCRAFT NOISE; HENCE, THE NEF AREAS MAY BE USED AS  
A GUIDE TO LAND-USE PLANNING OR ZONING. THE NEF  
AREAS ARE BASED UPON AIRCRAFT NOISE DESCRIBED IN  
TERMS OF EFFECTIVE PERCEIVED NOISE LEVELS, PLUS  
CONSIDERATION OF THE NUMBER OF OPERATIONS PER DAYTIME  
AND NIGHTTIME PERIOD. NEF AREAS B AND C SHOW  
SIZABLE INCREASES BETWEEN 1965 AND 1970, PARTICULARLY  
IN NORTHEAST AND SOUTHWEST DIRECTIONS. BETWEEN  
1970 AND 1975, FURTHER MODERATE INCREASES IN NEF  
AREAS B AND C ARE FORECAST. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 660 709 1/5 20/1 13/2  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

1965, 1970 AND 1975 NOISE EXPOSURE FORECAST AREAS FOR  
LOS ANGELES INTERNATIONAL AIRPORT. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 67 22P BISHOP, DWIGHT E. ; HORONJEFF,  
RICHARD D. ;  
REPT. NO. BBN-1508  
CONTRACT: FA-67-WA-1705  
MONITOR: FAA-ADS 67-13

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON 'PROCEDURES FOR  
DEVELOPING NOISE EXPOSURE FORECAST AREAS FOR  
AIRCRAFT FLIGHT OPERATIONS.' SEE ALSO AD-660 706.

DESCRIPTORS: (\*AIRPORTS, \*URBAN AREAS), (\*URBAN  
PLANNING, \*JET ENGINE NOISE), AIR TRAFFIC, JET PLANE  
NOISE, FLIGHT PATHS, COMMERCIAL PLANES, TAKEOFF,  
LANDING, RUNWAYS (U)

NOISE EXPOSURE FORECAST (NEF) AREAS RESULTING  
FROM TAKEOFF AND LANDING OPERATIONS AT LOS  
ANGELES INTERNATIONAL AIRPORT ARE SHOWN FOR  
1965, 1970, AND 1975. THE NEF AREAS DEPICT AREAS  
OF DIFFERING LAND-USE COMPATIBILITY WITH RESPECT TO  
AIRCRAFT NOISE; HENCE, THE NEF AREAS MAY BE USED AS  
A GUIDE TO LAND-USE PLANNING OR ZONING. THE NEF  
AREAS ARE BASED UPON AIRCRAFT NOISE DESCRIBED IN  
TERMS OF EFFECTIVE PERCEIVED NOISE LEVELS, PLUS  
CONSIDERATION OF THE NUMBER OF OPERATIONS PER DAYTIME  
AND NIGHTTIME PERIOD. NEF AREAS B AND C SHOW A  
RELATIVELY LARGE INCREASE BETWEEN 1965 AND 1970  
REFLECTING A LARGE INCREASE IN THE NUMBER OF AIRPORT  
OPERATIONS AND EXPANDED USE OF RUNWAYS 24L AND  
24R IN 1970. BETWEEN 1970 AND 1975, ONLY A  
SLIGHT INCREASE IN NEF AREAS B AND C IS  
OBSERVED, SINCE ONLY A MODERATE INCREASE IN TOTAL  
NUMBER OF OPERATIONS HAS BEEN FORECAST. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 660 710 1/5 20/1 13/2  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

1965, 1970 AND 1975 NOISE EXPOSURE FORECAST AREAS FOR  
JOHN F. KENNEDY AIRPORT, NEW YORK. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

AUG 67 22P BISHOP, DWIGHT F. ; HORONJEFF,  
RICHARD D. ;  
REPT. NO. BBN-1510  
CONTRACT: FA-67-WA-1705  
MONITOR: FAA-ADS 67-11

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON 'PROCEDURES FOR  
DEVELOPING NOISE EXPOSURE FORECAST AREAS FOR  
AIRCRAFT FLIGHT OPERATIONS.' SEE ALSO AD-660 706.

DESCRIPTORS: (\*AIRPORTS, \*URBAN AREAS), (\*URBAN  
PLANNING, \*JET ENGINE NOISE), AIR TRAFFIC, JET PLANE  
NOISE, FLIGHT PATHS, COMMERCIAL PLANES, TAKEOFF,  
LANDING, BUILDINGS, CONSTRUCTION, VOICE COMMUNICATION(U)

NOISE EXPOSURE FORECAST (NEF) AREAS RESULTING  
FROM TAKEOFF AND LANDING OPERATIONS AT JOHN F.  
KENNEDY AIRPORT, NEW YORK, ARE SHOWN FOR  
1965, 1970, AND 1975. THE NEF AREAS DEPICT AREAS  
OF DIFFERING LAND-USE COMPATIBILITY WITH RESPECT TO  
AIRCRAFT NOISE; HENCE, THE NEF AREAS MAY BE USED AS  
A GUIDE TO LAND-USE PLANNING OR ZONING. THE NEF  
AREAS ARE BASED UPON AIRCRAFT NOISE DESCRIBED IN  
TERMS OF EFFECTIVE PERCEIVED NOISE LEVELS, PLUS  
CONSIDERATION OF THE NUMBER OF OPERATIONS PER DAYTIME  
AND NIGHTTIME PERIOD. NEF AREAS B AND C SHOW  
SIZABLE INCREASES BETWEEN 1965 AND 1970. BETWEEN  
1970 AND 1975, A VERY MODERATE INCREASE IN NEF  
AREAS B AND C IS FORECAST. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 660 712 17/2 20/1 1/2  
BOLT BERANFK AND NEWMAN INC CAMBRIDGE MASS

THE SPEECH INTERFERENCE EFFECTS OF AIRCRAFT  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 67 79P WILLIAMS, C. E. ; STEVENS, K.  
N. ; HECKER, M. H. L. ; PEARSONS, K. S. ;  
CONTRACT: FA-66-WA-1566  
MONITOR: FAA-ADS 67-19

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, INTERFERENCE), (\*SPEECH,  
\*INTELLIGIBILITY), AUDITORY PERCEPTION, ACCEPTABILITY,  
VOICE COMMUNICATIONS, JET ENGINE NOISE, COMMUNICATION  
AND RADIO SYSTEMS, TELEVISION SYSTEMS, TELEPHONE  
SYSTEMS

(U)

FOR VARIOUS AIRCRAFT FLYOVERS, SPEECH  
INTELLIGIBILITY SCORES AND CALCULATIONS OF AI  
(ARTICULATION INDEX) WERE OBTAINED AS FUNCTIONS  
OF TIME. THESE DATA WERE THEN USED TO ESTABLISH  
THE RELATION BETWEEN AI AND INTELLIGIBILITY FOR  
TIME-VARYING NOISE. A SIMILAR RELATION WAS ALSO  
OBTAINED FOR STEADY-STATE SIMULATED JET NOISE. A  
COMPARISON OF THE TWO RELATIONS SHOWED THAT FOR A  
GIVEN AI, THE TIME-VARYING NOISE PROVIDED LESS  
MASKING THAN THE STEADY-STATE NOISE. THE  
DIFFERENCE FOUND BETWEEN THE TWO RELATIONS CAUTIONS  
AGAINST THE USE OF RELATIONS ESTABLISHED FOR STEADY-  
STATE NOISE TO PREDICT INTELLIGIBILITY SCORES THAT  
MIGHT BE OBTAINED WITH TIME-VARYING NOISE. THE  
AIRCRAFT FLYOVERS EMPLOYED IN THE INTELLIGIBILITY  
TESTS WERE ALSO PRESENTED TO LISTENERS WHO WERE ASKED  
TO RATE THEM IN TERMS OF THEIR ACCEPTABILITY IN THE  
HOME. USING A RATING SCALE HAVING THE CATEGORIES  
'OF NO CONCERN,' 'ACCEPTABLE,' 'BARELY ACCEPTABLE,'  
AND 'UNACCEPTABLE,' JUDGMENTS WERE OBTAINED IN THREE  
LISTENING SITUATIONS: (1) IN THE PRESENCE OF  
RADIO-TV SPEECH; (2) IN THE ABSENCE OF SPEECH;  
AND (3) IN THE PRESENCE OF TELEPHONE SPEECH.  
(AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 663 904 20/1 6/16  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

GROWTH OF NOISINESS FOR TONES AND BANDS OF NOISE AT  
DIFFERENT FREQUENCIES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
DEC 67 88P PARNELL, JOHN E. ; NAGEL,  
DAVID C. ; PARRY, HUGH J. ;  
CONTRACT: FA-65-WA-1180  
MONITOR: FAA ADS-67-21

UNCLASSIFIED REPORT

DESCRIPTORS: (\*NOISE, \*AUDITORY PERCEPTION), (\*AIRCRAFT  
NOISE, AUDITORY PERCEPTION), AUDITORY SIGNALS,  
FREQUENCY, INTENSITY, TEST METHODS, MATHEMATICAL  
PREDICTION, DIAGRAMS (U)

JUDGMENT TESTS WERE CONDUCTED TO MEASURE THE GROWTH  
OF NOISINESS FOR TONES AND NARROW BANDS OF NOISE  
UNDER VARIOUS LISTENING CONDITIONS. THE GROWTH OF  
NOISINESS FOR A 1 KHZ TONE AND AN OCTAVE BAND OF  
NOISE CENTERED AT 1 KHZ WERE MEASURED USING BOTH  
THE METHOD OF ADJUSTMENT AND A MAGNITUDE ESTIMATION  
METHOD. EQUAL NOISINESS CONTOURS WERE DETERMINED  
FOR SELECTED LISTENING CONDITIONS IN ORDER TO MEASURE  
THE GROWTH OF NOISINESS AT FREQUENCIES OTHER THAN 1  
KHZ. THE GROWTH OF NOISINESS WAS FOUND TO DEPEND  
STRONGLY ON TEST METHOD WITH THE MAGNITUDE ESTIMATION  
TESTS GIVING SIGNIFICANTLY LARGER VALUES FOR DOUBLING  
OR HALVING OF PERCEIVED NOISINESS. EQUAL NOISINESS  
CONTOURS ARE SHOWN FOR PURE TONES IN A FREE FIELD,  
ONE-THIRD OCTAVE BANDS OF NOISE IN A FREE FIELD AND  
ONE-THIRD OCTAVE BANDS OF NOISE IN A DIFFUSE FIELD.  
IT WAS CONCLUDED THAT THE SPECIFIC VALUE USED FOR  
THE GROWTH OF NOISINESS DID NOT SIGNIFICANTLY AFFECT  
THE CALCULATION OF THE RELATIVE PNL VALUES FOR MANY  
DIFFERENT SPECTRA. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 664 040            1/3            1/5  
RAND CORP SANTA MONICA CALIF

AIR TRANSPORTATION IN THE 1970'S: PROBLEMS AND  
OPPORTUNITIES,

(U)

JAN 68    38P            CARTAINO, T. F. ;  
REPT. NO.    RM-5268-PR  
CONTRACT:    F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIR TRANSPORTATION, PREDICTIONS),  
PLANNING, COMMERCIAL PLANES, URBAN PLANNING,  
HELICOPTERS, AIRCRAFT, AIRPORTS, AIRCRAFT NOISE,  
ECONOMICS, TERMINAL FLIGHT FACILITIES, SHORT TAKEOFF  
AIRCRAFT, VERTICAL TAKEOFF AIRCRAFT, AIRFRAMES, AVIATION  
SAFETY, SUPERSONIC AIRCRAFT, JET TRANSPORT PLANES,  
SUBSONIC CHARACTERISTICS

(U)

AN EXAMINATION IS MADE OF THE PROBLEMS, AND  
POSSIBLE SOLUTIONS, OF COMMERCIAL AIR TRANSPORTATION  
IN THE 1970'S, WITH EMPHASIS ON SUBSONIC PASSENGER  
VEHICLES THAT WILL BE IN OPERATION BY 1975. MAJOR  
AIR TRANSPORTATION PROBLEMS IN THE 1970'S WILL BE  
CENTERED IN AND AROUND THE TERMINAL AREAS. AIRPORT  
NOISE AND THE ADVERSE REACTIONS OF ADJACENT  
COMMUNITIES ARE ALREADY SERIOUS. ECONOMIC  
COMPARISONS OF NEW AIRCRAFT TYPES FOR DOMESTIC AND  
INTERNATIONAL TRANSPORT ARE MADE ON THE BASIS OF A  
THEORETICAL FARE, I.E., THE FARE THAT AN AIRLINE  
OPERATOR WOULD HAVE TO CHARGE TO EARN A GIVEN RATE OF  
RETURN ON HIS INVESTMENT. POSSIBLE SOLUTIONS  
INCLUDE ESTABLISHMENT OF REGIONAL AIR CENTERS AWAY  
FROM METROPOLITAN AREAS; VTOL VEHICLES FOR SHORT-  
HAUL INTERCITY, CITY-TO-AIRPORT, AND AIRPORT-TO-  
AIRPORT TRANSPORT (50-200 MILES); AIR BUSES FOR  
MEDIUM-HAUL TRANSPORT (500-2000 MILES); THE  
SUBSONIC STRETCHED JET AND JUMBO JET FOR DOMESTIC  
LONG-HAUL TRANSPORT (2500 MILES). THE  
SUBSONICS ARE COMPETITIVE FOR INTERNATIONAL LONG-HAUL  
TRANSPORT UP TO 4000 MILES; THE JUMBO JET HAS A 6000-  
MILE FULL-LOAD RANGE. TECHNOLOGICAL ADVANCES  
INCLUDE THE SUPERCRITICAL WING; ECONOMICAL METHODS OF  
USING TITANIUM FOR LIGHTER, SAFER AIRFRAMES; AND  
IMPROVED SAFETY DEVICES. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 666 376 13/13 5/11

ROLT BERANEK AND NEWMAN INC LOS ANGELES CALIF

A STUDY--INSULATING HOUSES FROM AIRCRAFT NOISE. (U)

NOV 66 103P

UNCLASSIFIED REPORT

AVAILABILITY: HARD COPY AVAILABLE FROM  
SUPERINTENDENT OF DOCUMENTS, GPO, WASHINGTON, D.  
C. 20402. \$0.55 AS HH1.31:19.

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH FEDERAL  
HOUSING ADMINISTRATION, WASHINGTON, D. C.

DESCRIPTORS: (\*URBAN AREAS, \*AIRCRAFT NOISE),  
(\*HOUSING(DWELLINGS), \*ACOUSTIC INSULATION), WAVE  
PROPAGATION, REDUCTION, COSTS, INSTRUCTION MANUALS,  
ENGINE NOISE, CONSTRUCTION (U)

THE STUDY IS OFFERED AS A PRACTICAL USABLE GUIDE  
SETTING FORTH WAYS (WITH COSTS) TO INSULATE  
EXISTING HOUSES FROM AIRCRAFT NOISE. THIS GUIDE IS  
INTENDED FOR PROPERTY OWNERS WHO NOW FIND THEMSELVES  
LOCATED IN AREAS SUBJECTED TO BOTHERSOME AIRCRAFT  
NOISE. INCLUDED IN THIS GUIDE IS A DISCUSSION OF  
THE BASIC AIRCRAFT NOISES AND PRACTICAL MODIFICATIONS  
THAT CAN BE MADE TO A STRUCTURE TO REDUCE THE  
TRANSMISSION OF THE NOISE INTO THE DWELLING.  
CONSTRUCTION DETAILS WITH PRIORITIES AND ESTIMATED  
COSTS ARE GIVEN FOR THREE LEVELS OF NOISE INSULATION.  
THE PRACTICAL LIMITS OF NOISE INSULATION ARE SET  
FORTH. TO GAIN USEFUL BENEFITS FROM NOISE  
INSULATION, IT WILL USUALLY BE NECESSARY TO AIR  
CONDITION THE HOUSES YEAR ROUND. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 670 165 1/3 20/1 5/5  
AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO

GUIDELINES FOR ESTABLISHING INTERIOR NOISE LEVEL  
CRITERIA FOR AIR FORCE AIRCRAFT, (U)

MAR 68 24P WAFFORD, JOHN H. ;  
MONITOR: SEG TR-67-57

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT CABINS, \*AIRCRAFT NOISE),  
STANDARDS, SPECIFICATIONS, HUMAN FACTORS ENGINEERING,  
CONTROL, INTENSITY, SPEECH, INTELLIGIBILITY,  
FATIGUE(PHYSIOLOGY), HEARING, TOLERANCES(PHYSIOLOGY),  
THRESHOLDS(PHYSIOLOGY), FIGHTER AIRCRAFT, TRAINING  
PLANES, TRANSPORT AIRCRAFT, SHORT TAKEOFF AIRCRAFT (U)

GUIDELINES ARE PRESENTED TO ASSIST THE ENGINEER IN  
DEVELOPING INTERIOR NOISE LEVEL CRITERIA FOR AIR  
FORCE PROCURED AIRCRAFT. THE SHORTCOMINGS OF  
AIR FORCE DOCUMENTS USED IN ESTABLISHING INTERIOR  
NOISE LEVEL REQUIREMENTS ARE POINTED OUT. SPEECH  
COMMUNICATION, ANNOYANCE AND FATIGUE, AND DAMAGE-  
RISK, AND THEIR RELATIONSHIP TO SPECIFIC NOISE LEVEL  
REQUIREMENTS, ARE DISCUSSED. BASED ON THESE NOISE  
ENVIRONMENTAL FACTORS AND AIR FORCE REQUIREMENTS,  
INTERIOR NOISE LEVEL CRITERIA ARE DEVELOPED FOR  
VARIOUS TYPES OF AIRCRAFT. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 671 188 6/16 6/19  
NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA

THE RELATIONSHIP OF THE NAVAL AVIATOR'S SPEECH  
DISCRIMINATION TEST TO THE PURE TONE AUDIOGRAM, (U)

APR 68 21P GREENE, JAMES W. ;  
REPT. NO. NAMI-1037  
PROJ: NAVMED-MF022.03.02-5021  
TASK: MF022.03.02-5021.2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AVIATION PERSONNEL, AUDIOMETRY), NAVAL  
AVIATION, SPEECH RECOGNITION, AIRCRAFT NOISE,  
STATISTICAL ANALYSIS, HEARING, THRESHOLDS (PHYSIOLOGY),  
AVIATION MEDICINE, SPEECH, INTELLIGIBILITY (U)

THE PURE TONE THRESHOLD AUDIOGRAM REQUIRED ANNUALLY  
FOR NAVAL AVIATORS PROVIDES LIMITED INFORMATION  
TOWARD DETERMINING THEIR ABILITY TO UNDERSTAND SPEECH  
IN THE AIRCRAFT. THE NAVAL AVIATOR'S SPEECH  
DISCRIMINATION TEST (NASDT) WAS DEVELOPED TO  
EVALUATE OBJECTIVELY THE ABILITY TO UNDERSTAND VERY  
LOUD SPEECH IN A BACKGROUND OF AIRCRAFT NOISE FOR  
THOSE AVIATORS WHOSE HEARING FAILED TO MEET THE  
STANDARDS. AN EARLIER STUDY HAD INDICATED THAT  
THERE WAS NO RELATIONSHIP BETWEEN THE RESULTS OF THE  
NASDT AND THE CONFIGURATION OF THE PURE TONE  
AUDIOGRAM; THEREFORE, TO FURTHER EXAMINE THIS  
FINDING, DATA FROM PURE TONE THRESHOLD TESTS AND THE  
NASDT WERE OBTAINED FOR OVER 500 MEN WITH DIFFERENT  
DEGREES OF FLIGHT EXPERIENCE. STATISTICAL ANALYSIS  
OF THE NASDT RESULTS SHOWED THAT THERE WAS GREAT  
CONSISTENCY IN SCORES MADE BY THE DIFFERENT GROUPS.  
NO PRACTICAL CORRELATIONS BETWEEN NASDT SCORES  
AND HEARING THRESHOLD LEVELS WERE FOUND. SINCE THE  
NASDT, THEREFORE, APPEARS TO PROVIDE A MORE  
REALISTIC EVALUATION OF HEARING IN AIRCRAFT NOISE, IT  
IS SUGGESTED THAT IT BE EMPLOYED AS A SUPPLEMENTARY  
TEST IN THE HEARING EVALUATIONS OF ALL AVIATORS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 673 346 1/3 20/1  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

ACOUSTIC ENVIRONMENTS OF THE F-111A AIRCRAFT DURING  
GROUND RUNUP. (U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 67-JAN 68,  
MAY 68 60P COLE, JOHN N. ; ROSE, JUSTUS  
F. , JR;  
REPT. NO. AMRL-TR-68-14  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET FIGHTERS, \*ENGINE NOISE), SOUND,  
PRESSURE, MEASUREMENT, RANGE(DISTANCE), POWER SPECTRA,  
SPEECH, NOISE, INTERFERENCE, MAINTENANCE, PERSONNEL,  
STRESS(PHYSIOLOGY), PERFORMANCE(HUMAN) (U)  
IDENTIFIERS: F-111A AIRCRAFT, F-111 AIRCRAFT,  
GRAPHS(CHARTS) (U)

SOUND PRESSURE LEVEL MEASUREMENTS WERE MADE ON AN  
F-111A AIRCRAFT AT 250-FOOT RADIAL DISTANCE WITH  
THREE DIFFERENT ENGINE POWER CONFIGURATIONS AT  
WRIGHT-PATTERSON AFB, OHIO. IN ADDITION,  
SOUND LEVEL MEASUREMENTS WERE MADE AT FOUR  
MAINTENANCE POSITIONS WHERE PERSONNEL WOULD TYPICALLY  
BE LOCATED DURING NORMAL GROUND OPERATIONS. THESE  
DATA WERE USED TO COMPUTE THE POWER SPECTRA,  
DIRECTIVITY INDICES, EQUAL SOUND PRESSURE LEVEL  
CONTOURS, EQUAL PERCEIVED NOISE LEVEL CONTOURS, AND  
EQUAL SPEECH INTERFERENCE LEVEL CONTOURS. THESE  
RESULTS ARE PRESENTED IN GRAPHICAL FORM AND CAN BE  
USED TO DETERMINE THE ACOUSTIC ENVIRONMENTS AT  
DISTANCES FROM 125 TO 6000 FEET FROM THE AIRCRAFT  
DURING GROUND OPERATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 673 682 20/1 1/3  
STANFORD RESEARCH INST MENLO PARK CALIF SENSORY SCIENCES  
RESEARCH CENTER

COMPARISONS BETWEEN SUBJECTIVE RATINGS OF AIRCRAFT  
NOISE AND VARIOUS OBJECTIVE MEASURES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 68 80P HECKER, MICHAEL H. L. ;  
KRYTER, KARL D. ;  
CONTRACT: FA-67-WA-1696  
MONITOR: FAA-NO 68-33

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, MEASUREMENT), (\*AUDITORY  
PERCEPTION, AIRCRAFT NOISE), ACCEPTABILITY, JET ENGINE  
NOISE, PSYCHOACOUSTICS, CORRELATION TECHNIQUES,  
PREDICTIONS, TABLES(DATA) (U)

VARIOUS ESTABLISHED AND PROPOSED OBJECTIVE METHODS  
OF MEASURING AIRCRAFT NOISE WERE EVALUATED WITH  
RESPECT TO THEIR ABILITY TO PREDICT SUBJECTIVE  
RATINGS OF THE ACCEPTABILITY OF NOISE PRODUCED BY  
PRESENT-DAY COMMERCIAL AIRCRAFT. RECORDED FLYOVERS  
OF SEVERAL TYPES OF AIRCRAFT DURING TAKEOFF AND  
LANDING OPERATIONS WERE SELECTED, AND OTHER FLYOVERS  
WERE ELECTRONICALLY SIMULATED. PAIRED-COMPARISON  
LISTENING TESTS WERE USED TO DETERMINE THE LEVEL AT  
WHICH EACH FLYOVER WAS CONSIDERED TO BE AS ACCEPTABLE  
AS A REFERENCE SOUND. OBJECTIVE MEASURES  
CORRESPONDING TO THIS LEVEL WERE COMPUTED FOR EACH  
FLYOVER. THE RELATIVE ACCURACY WITH WHICH THE  
OBJECTIVE MEASURES PREDICTED THE SUBJECTIVE RATINGS  
WAS EXPRESSED IN TERMS OF THE VARIANCE IN THE  
COMPUTED VALUES OF EACH OBJECTIVE MEASURE. THE  
SMALLEST VARIANCE WAS ASSOCIATED WITH A MEASURE THAT  
TAKES INTO ACCOUNT THE SPECTRAL PROPERTIES OF A GIVEN  
FLYOVER FOR ITS ENTIRE DURATION AND ALSO THE PRESENCE  
OF PURE TONES OR OTHER NARROW-BAND ENERGY  
CONCENTRATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 673 987 20/1 5/10 1/3  
WYLE LABS INC HUNTSVILLE ALA RESEARCH STAFF

SUBJECTIVE EVALUATION OF GENERAL AVIATION AIRCRAFT  
NOISE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 68 107P OLLERHEAD, J. B. ;  
CONTRACT: FA-67-WA-1731  
MONITOR: FAA-NO 68-35

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, AUDITORY PERCEPTION),  
(\*JET PLANE NOISE, AUDITORY PERCEPTION), GAS TURBINES,  
TURBOPROP ENGINES, TURBOJET ENGINES, SCALE, CORRELATION  
TECHNIQUES, SIMULATION, DOPPLER EFFECT, JET TRANSPORT  
PLANES, TEST METHODS, CIVIL AVIATION (U)  
IDENTIFIERS: EVALUATION (U)

AN EXPERIMENT WAS CONDUCTED, IN A PROGRESSIVE WAVE  
FIELD, IN WHICH A GROUP OF SUBJECTS EVALUATED THE  
NOISINESS OF RECORDED GENERAL AVIATION AIRCRAFT  
SOUNDS IN COMPARISON TO JET TRANSPORT FLYOVER NOISE.  
THE AIRCRAFT STUDIED WERE PISTON ENGINED, TURBOPROP  
AND TURBOJET AIRCRAFT IN THE WEIGHT RANGE 2000 TO 13,  
000 LBS. TWENTY-EIGHT NOISE RATING SCALES WERE  
EVALUATED AND IT WAS FOUND THAT OF CURRENTLY USED  
SCALES, PERCEIVED NOISE LEVEL, CORRECTED FOR  
PURE TONE CONTENT, GAVE THE BEST CORRELATION WITH THE  
SUBJECTIVE RESULTS. FOR THE SIGNALS STUDIED,  
DURATION APPEARED TO HAVE LITTLE INFLUENCE ON THE  
SUBJECTIVE NOISINESS OF FLYOVER SOUNDS. BY  
COMPARING THE RESULTS FOR A NUMBER OF SIMULATED  
FLYOVER SOUNDS IT WAS CONCLUDED THAT AN EXPLANATION  
LIES IN THE INFLUENCE OF THE DOPPLER FREQUENCY  
SHIFT, WHICH TENDS TO CANCEL THE EFFECTS OF DURATION.  
A DOPPLER CORRECTION FOR CURRENT NOISE RATING  
METHODS IS PRESENTED WHICH GENERALLY IMPROVES THEIR  
CORRELATION WITH OBSERVED RESULTS. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 674 184 6/17 5/5 5/9  
ARMY AEROMEDICAL RESEARCH UNIT FORT RUCKER ALA

USER EVALUATIONS OF TWO AIRCREW PROTECTIVE HELMETS, (U)

AUG 68 37P BYNUM, JAMES A. I  
REPT. NO. USAARU-69-1  
PROJ: DA-3A0-2560-1A819  
TASK: 3A0-2560-1A819-036

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FLIGHT CREWS, PROTECTIVE CLOTHING),  
(\*HELMETS, PERFORMANCE(ENGINEERING)), HUMAN FACTORS  
ENGINEERING, JET PLANE NOISE, ATTENUATION, EXPERIMENTAL  
DESIGN, ANALYSIS OF VARIANCE, PROTECTION, DESIGN,  
WEIGHT, ACCEPTABILITY, DECISION MAKING, VOICE  
COMMUNICATIONS (U)  
IDENTIFIERS: EVALUATION (U)

TWO AIRCREW PROTECTIVE HELMETS WERE EVALUATED BY 24  
INSTRUCTOR PILOTS WHO WERE DIVIDED EQUALLY INTO  
GROUPS SUBJECTED TO THREE AMBIENT NOISE ENVIRONMENTS.  
PILOTS RATED THE ARMY APH-5 AND THE SPH-3X  
(EXPERIMENTAL) ON EIGHT CATEGORIES DESIGNED TO  
ASSESS RELATIVE COMFORT, ACCEPTABILITY, AND NOISE  
ATTENUATION. RATINGS WERE COMPARED, USING A  
SPLIT-PLOT FACTORIAL ANALYSIS OF VARIANCE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 676 230 20/1 1/3 5/10  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF  
NOISE ABATEMENT

AIRCRAFT NOISE EVALUATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SFP 68 77P SPERRY, WILLIAM C. ;  
REPT. NO. FAA-NO-68-34  
PROJ: FAA-550-003-03H

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*AUDITORY PERCEPTION),  
STANDARDS, MATHEMATICAL PREDICTION, PSYCHOACOUSTICS,  
INTENSITY, TABLES(DATA) (U)  
IDENTIFIERS: EVALUATION, GRAPHS(CHARTS) (U)

THE FEDERAL AVIATION ADMINISTRATION, IN  
RESPONSE TO PUBLIC LAW 90-411, HAS BEGUN THE  
RULEMAKING PROCESS LEADING TO THE CERTIFICATION OF  
AIRCRAFT FOR NOISE. THE BASIC ELEMENT IN THE  
REGULATION CRITERIA IS THE NOISE EVALUATION MEASURE  
DESIGNATED AS EFFECTIVE PERCEIVED NOISE LEVEL,  
EPNL, WHICH IS A SINGLE NUMBER EVALUATOR OF THE  
SUBJECTIVE EFFECTS OF AIRCRAFT NOISE ON HUMAN BEINGS.  
SIMPLY STATED, EPNL CONSISTS OF INSTANTANEOUS  
PERCEIVED NOISE LEVEL CORRECTED FOR TONES AND  
DURATION. THE HISTORY OF THE DEVELOPMENT OF EPNL  
IS PRESENTED AND A CRITICAL EVALUATION OF ITS  
VALIDITY IS MADE. THE COMPUTATIONAL PROCEDURES ARE  
DESCRIBED IN DETAIL INCLUDING BOTH INTEGRATION AND  
APPROXIMATE METHODS FOR CALCULATING DURATION  
CORRECTIONS. EXAMPLES ARE GIVEN IN THE APPENDICES.  
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 686 673 1/3 20/1  
CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA

COCKPIT NOISE INTENSITY: FIFTEEN SINGLE-ENGINE  
LIGHT AIRCRAFT,

(U)

SFP 68 9P TOBIAS, JERRY V. ;  
MONITOR: FAA-AM 68-21

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COCKPITS, \*AIRCRAFT NOISE), CIVIL  
AVIATION, HEARING, SAFETY, EAR PROTECTORS, INTENSITY,  
LEVEL FLIGHT, TEST METHODS, LOW ALTITUDE, HIGH ALTITUDE,  
ACOUSTICS (U)  
IDENTIFIERS: AIRCRAFT, LIGHTWEIGHT, NOISE (U)

FIFTEEN OF THE MOST POPULAR SINGLE-ENGINE GENERAL-  
AVIATION LIGHT AIRCRAFT WERE TESTED FOR THE NOISE  
INTENSITY PRESENT DURING NORMAL CRUISING OPERATIONS  
AT 2000, AND 10,000 FEET MSL (MEAN SEA LEVEL).  
IN COMPARISON WITH CURRENTLY ACCEPTED DRC  
(DAMAGE-RISK CRITERION) CURVES, THE NOISE LEVELS  
FOUND EVEN IN THE QUIETEST PLANE TESTED COULD BE  
DAMAGING. HOWEVER, A WELL FITTED PAIR OF EARPLUGS  
SHOULD PROTECT AGAINST THE PHYSIOLOGICALLY DAMAGING  
NOISE INTENSITIES ENCOUNTERED IN THIS STUDY.  
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 686 736 1/3 20/1 6/17  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

NOISE ENVIPONS AND HELMET PERFORMANCE FOR THE P-  
1127 V/STOL AIRCRAFT. (U)

DESCRIPTIVE NOTE: FINAL REPT. OCT 67-MAR 68,  
DFC 68 29P SOMMER, HENRY C. ; ROSE,  
JUSTUS F. , JR. ; KNOBLACH, WILLIAM C. ;  
REPT. NO. AMRL-TR-68-70  
PROJ: AF-7231  
TASK: 723103, 723104

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, MEASUREMENT), (\*HELMETS,  
ACOUSTIC INSULATION), (\*VERTICAL TAKEOFF AIRCRAFT,  
AIRCRAFT NOISE), COCKPITS, ENVIRONMENT, EFFECTIVENESS,  
CORRELATION TECHNIQUES, CAPTIVE TESTS, ENGINE NOISE,  
TEST FACILITIES, TEST METHODS, AUDIOMETRY (U)  
IDENTIFIERS: NOISE, V-6 AIRCRAFT, XV-6A AIRCRAFT (U)

THE PURPOSE OF THE EVALUATION WAS (1) TO  
MEASURE THE ACOUSTIC NOISE ENVIRONMENT IN THE COCKPIT  
OF THE UNITED KINGDOM HAWKER SIDDELEY P-  
1127 V/STOL AIRCRAFT THAT WOULD SERVE AS AN  
ACOUSTIC GUIDELINE FOR COCKPIT NOISE LEVELS OF  
AIRCRAFT BEING CONTEMPLATED OR UNDER CONSTRUCTION,  
AND (2) TO DETERMINE THE ACOUSTIC ATTENUATION OF  
VARIOUS AIR FORCE FLIGHT HELMETS IN THE INVENTORY  
OR BEING CONTEMPLATED FOR AIR FORCE INVENTORY  
ITEMS. COCKPIT SOUND PRESSURE LEVELS IN THE P-  
1127 V/STOL AIRCRAFT AT VARIOUS ENGINE RPM  
SETTINGS WERE MEASURED. THE COCKPIT NOISE  
ENVIRONMENT AT MAXIMUM ENGINE RPM WAS REPRODUCED IN  
THE LABORATORY AND USED TO OBTAIN OBJECTIVE  
ATTENUATION DATA FOR THREE AIR FORCE FLIGHT  
HELMET/LINER CONFIGURATIONS. MEASUREMENT OF REAL-  
EAR ATTENUATION AT THRESHOLD WERE ALSO ACCOMPLISHED  
ON THE HELMET/LINER CONFIGURATIONS. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 688 111 1/3 20/1 6/19  
CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA

COCKPIT NOISE INTENSITY: ELEVEN TWIN-ENGINE LIGHT  
AIRCRAFT, (U)

OCT 68 8P TOBIAS, JERRY V. ;  
MONITOR: FAA-AM 68-25

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COCKPITS, \*AIRCRAFT NOISE), CIVIL  
AVIATION, HEARING, AVIATION MEDICINE, EAR PROTECTORS,  
AVIATION SAFETY (U)

IDENTIFIERS: \*GENERAL AVIATION AIRCRAFT, \*AIRCRAFT,  
\*LIGHTWEIGHT (U)

ELEVEN OF THE MOST POPULAR TWIN-ENGINE GENERAL-  
AVIATION LIGHT AIRCRAFT WERE TESTED FOR THE NOISE  
INTENSITY PRESENT DURING NORMAL CRUISING OPERATIONS  
AT 2000, 6000, AND 10000 FEET MSL (MEAN SEA  
LEVEL). ALTHOUGH GENERALLY QUIETER THAN SINGLE-  
ENGINE PLANES, THESE AIRCRAFT, IN COMPARISON WITH  
CURRENTLY ACCEPTED DRC (DAMAGE-RISK CRITERION)  
CURVES, HAVE NOISE LEVELS (EVEN IN THE QUIETEST  
PLANE TESTED) THAT COULD BE DAMAGING. HOWEVER, A  
WELL FITTED PAIR OF EARPLUGS SHOULD PROTECT AGAINST  
THE PHYSIOLOGICALLY DAMAGING NOISE INTENSITIES  
ENCOUNTERED IN THE STUDY. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 68A 478            1/5            20/1  
RAND CORP SANTA MONICA CALIF

SOME PROJECTED EFFECTS OF JET NOISE ON RESIDENTIAL  
PROPERTY NEAR LOS ANGELES INTERNATIONAL AIRPORT BY  
1970. (U)

DESCRIPTIVE NOTE: THESIS,  
APR 69 167P            MCCLURE, PAUL T. ;  
REPT. NO. P-4083

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*URBAN AREAS),  
(\*AIRPORTS, URBAN AREAS), SOUND, POWER, FREQUENCY,  
PERCEPTION, HEARING, MEASUREMENT, COUNTERMEASURES,  
AIRCRAFT, DESIGN, SUPPRESSORS, ACOUSTIC INSULATION,  
COSTS, TERMINAL FLIGHT FACILITIES, AIRCRAFT LANDINGS,  
REVIEWS, THESES (U)  
IDENTIFIERS: LAND USE, \*LOS ANGELES INTERNATIONAL  
AIRPORT, ZONING (U)

CONTENTS: THE PROBLEM AND DEFINITION OF TERMS  
USED; REVIEW OF THE LITERATURE; NOISE  
MEASUREMENT; PROPERTY MADE UNINHABITABLE BY JET  
NOISE; CHANGING USE OF PROPERTY MADE UNINHABITABLE  
BY JET NOISE; PAYING THE NOISE COST - REVENUE  
SOURCES; SUMMARY AND CONCLUSION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 689 086 6/19  
EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZURICH (SWITZERLAND)  
INSTITUT FUER HYGIENE UND ARBEITSPHYSIOLOGIE

EXPERIMENTELLE UNTERSUCHUNGEN UEBER DIE STOEERWIRKUNG  
VON FLUGZEUGLAERM (EXPERIMENTAL INVESTIGATIONS OF  
DISCOMFORT PRODUCED BY AIRPLANE NOISES),

(U)

JUL 66 12P GRANDJEAN, ETIENNE ; PERRET,  
ETIENNE ; LAUBER, ANSELM ;

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN INTERNATIONALE ZEITSCHRIFT  
FUER ANGEWANDTE PHYSIOLOGIE EINSCHLIESSLICH  
ARBEITSPHYSIOLOGIE (WEST GERMANY) V23 P191-202  
1966. NO COPIES FURNISHED.

SUPPLEMENTARY NOTE: TEXT IN GERMAN; SUMMARY IN  
ENGLISH, GERMAN, AND FRENCH.

DESCRIPTORS: (\*AIRCRAFT NOISE, STRESS(PHYSIOLOGY)),  
(\*AUDIOMETRY, AIRCRAFT NOISE), HUMANS,  
STRESS(PSYCHOLOGY), THRESHOLDS(PHYSIOLOGY), HEARING,  
SWITZERLAND, TOLERANCES(PHYSIOLOGY) (U)

THE DISCOMFORT BROUGHT TO STUDENTS BY AIRPLANE  
NOISES RECORDED ON MAGNETIC TAPE WAS STUDIED DURING  
CLASSES. DURING 18 PERIODS, STUDENTS HEARING  
ALTOGETHER 128 AIRPLANE NOISES, GAVE AFTER EACH NOISE  
A SCORE BETWEEN 1 AND 6 ACCORDING TO THEIR SUBJECTIVE  
EVALUATION OF THE DISCOMFORT THEY EXPERIENCED. THE  
VARIABLES IN THE AIRPLANE NOISES WHICH WERE USED GAVE  
THE FOLLOWING RESULTS: (1) THE DISCOMFORT  
INCREASES ALMOST LINEARLY WITH THE AUDITORY LEVEL  
EXPRESSED IN DB(A) OR IN PN DB; THIS IS TRUE OF  
THE TWO AUDITORY SPECTRA STUDIED (DC-8 AND  
CARAVELLE). (2) THE DISCOMFORT INCREASES  
WITH THE DURATION OF NOISES. (3) FOR IDENTICAL  
NOISE LEVELS, EXPRESSED IN DB(A), THE ACOUSTICAL  
SPECTRUM WITH HIGH PITCH PREDOMINANCE (CARAVELLE'S  
LANDING) LED TO A STRONGER DISCOMFORT THAN THE  
SPECTRUM WITH LOW PITCH PREDOMINANCE (TAKING-OFF OF  
THE DC-8). (4) THE DISCOMFORT WAS THE SAME  
DURING PERIODS WITH 5 OR 6 AIRPLANE NOISES AS DURING  
PERIODS WITH 10 OR 11. (5) THE REPETITION OF  
THE SAME NOISES LED TO A LOW BUT SIGNIFICANT DECREASE  
IN THE DISCOMFORT EXPERIENCED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 689 107            1/5            1/2  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C

A SUGGESTED ACTION PROGRAM FOR THE RELIEF OF  
AIRFIELD CONGESTION AT SELECTED AIRPORTS,            (U)

APR 69    213P            MILLION, L. N. ; COPELAND, J.  
M. ; HORNSBY, J. T. ; KEEPERS, W. C. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRPORTS, \*AIR TRAFFIC), TERMINAL FLIGHT  
FACILITIES, RUNWAYS, AIRPORT CONTROL TOWERS, AIR TRAFFIC  
CONTROL SYSTEMS, AIR TRAFFIC CONTROL TERMINAL AREAS,  
NAVIGATIONAL AIDS, CONSTRUCTION, COSTS, COST  
EFFECTIVENESS, AIRCRAFT NOISE, SITE SELECTION, AIR  
TRANSPORTATION            (U)  
IDENTIFIERS: AIRPORT CONGESTION, TAXIWAYS            (U)

THIS REPORT SEPARATELY IDENTIFIES AND ANALYZES THE  
POSSIBLE IMPROVEMENTS LEADING TO REDUCED AIRCRAFT  
DELAYS AT EIGHTEEN OF THE NATION'S HIGHEST DENSITY  
AIRPORTS. DISCUSSION IS PRESENTED ON THE CAUSES  
CONTRIBUTING TO AERONAUTICAL CONGESTION AND ON THE  
CURRENT OPERATIONAL STATUS OF EACH AIRPORT. THE  
REPORT IS CONCERNED PRIMARILY WITH PHYSICAL  
CONSTRUCTION PROJECTS WHICH WILL ENHANCE THE  
PARTICULAR AIRPORT'S AIRFIELD CAPACITY SUCH AS HIGH-  
SPEED EXIT TAXIWAYS, PARALLEL RUNWAYS, AND  
NAVIGATIONAL AIDS. IT ALSO EXAMINES CERTAIN  
PROCEDURAL IMPROVEMENTS SUCH AS INTERSECTION TAKEOFFS  
AND PART-TIME USE OF TAXIWAYS AS VFR RUNWAYS.  
EACH AIRPORT IMPROVEMENT, WHERE POSSIBLE, HAS BEEN  
EVALUATED FROM A COST VS. DELAY BENEFIT SAVINGS  
VIEWPOINT. THE RESULT IS A SERIES OF RECOMMENDED  
ACTIONS FOR EACH SURVEYED AIRPORT WITH EMPHASIS GIVEN  
TO THOSE ITEMS WHICH CAN BE CONSTRUCTED OR  
IMPLEMENTED AND PLACED IN OPERATION WITHIN ONE TO  
FOUR YEARS. (AUTHOR)            (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 690 827 20/1 5/3  
RAND CORP SANTA MONICA CALIF

INDICATORS OF THE EFFECT OF JET NOISE ON THE VALUE  
OF REAL ESTATE, (U)

JUL 69 38P MCCLURE, PAUL T. ;  
REPT. NO. P-4117

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, SOCIOMETRICS),  
ECONOMICS, TERRAIN, ATTITUDES(PSYCHOLOGY), MONEY,  
STATISTICAL ANALYSIS, ACOUSTIC INSULATION, COSTS, LAW,  
AIRPORTS, FLIGHT PATHS (U)

IDENTIFIERS: DEPRECIATION, LITIGATION, \*NOISE  
POLLUTION (U)

AIRPORT NEIGHBORS TYPICALLY CONTEND THAT THEIR  
PROPERTY SHOULD ENJOY AIRPORT-ACCELERATED  
APPRECIATION IN VALUE BUT NOT SUFFER COUNTERBALANCING  
EFFECTS FROM JET NOISE. THE PAPER DISCUSSES THE  
EFFECT OF JET NOISE ON PROPERTY VALUE AS INDICATED BY  
(1) MARKET VALUE CHANGES, (2) INSULATION  
COSTS, (3) EASEMENT COSTS, AND (4)  
LITIGATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 691 053 6/19 6/10 20/1 1/3  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

STANDARDIZATION OF AVIATION NOISE STRESS, (U)

69 8P BORSCHEVSKII, I. YA. ;  
KUZNETSOV, V. S. ; LAPAEV, E. V. ;  
REPT. NO. SAM-TT-R-1001-0169

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF VOENNO-MEDITSINSKII  
ZHURNAL (USSR) N10 P80-82 OCT 67, BY DAVID L.  
WOOD.

DESCRIPTORS: (\*JET ENGINE NOISE, \*STRESS(PHYSIOLOGY)),  
(\*TOLERANCES(PHYSIOLOGY), STANDARDIZATION), HEARING,  
THRESHOLDS(PHYSIOLOGY), JET PLANE NOISE, AUDITORY  
PERCEPTION, INTENSITY, USSR (U)  
IDENTIFIERS: NOISE POLLUTION, TRANSLATIONS (U)

THE STUDIES PERFORMED CONCERNING THE CUMULATIVE  
EFFECTS OF NOISE LEAD TO THE FOLLOWING RECOMMENDED  
MAXIMUM TOLERABLE LEVELS OF NOISE RELATIVE TO  
INTENSITY AND DURATION WITH DAILY EXPOSURE: UP TO  
100 DECIBELS--SIX HOURS, UP TO 110 DECIBELS--ONE  
HOUR, 115 DECIBELS--NOT MORE THAN 30 MINUTES.  
THESE CRITERIA BEAR REFERENCE TO INDIVIDUALS  
EXPOSED TO NOISE WITHOUT THE USE OF INDIVIDUAL  
PROTECTIVE DEVICES. WHEN THE LATTER ARE USED, THE  
ALLOWABLE LEVELS OF NOISE MAY BE CORRESPONDINGLY  
INCREASED BY TEN DECIBELS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 695 507 20/1 1/5  
BOLT BERANFK AND NEWMAN INC VAN NUYS CALIF

NOISE EXPOSURE FORECAST CONTOUR INTERPRETATIONS OF  
AIRCRAFT NOISE TRADEOFF STUDIES. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 69 46P BISHOP, DWIGHT E. ; HORONJEFF,  
RICHARD D. ;  
REPT. NO. BRN-1714  
CONTRACT: FA-68-WA-1900  
MONITOR: FAA-NO 69-2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRPORTS, JET PLANE NOISE), (\*JET PLANE  
NOISE, REDUCTION), AREA COVERAGE, ENGINE NOISE, TAKEOFF,  
TURBOFAN ENGINES, ENGINE NACELLES, TEST METHODS, (U)  
STATISTICAL ANALYSIS  
IDENTIFIERS: LOS ANGELES INTERNATIONAL AIRPORT, O'HARE  
INTERNATIONAL AIRPORT, TRADEOFFS (U)

THE EFFECTIVENESS OF CHANGES IN AIRCRAFT OPERATING  
PROCEDURES AND AIRCRAFT HARDWARE REGARDING THE  
REDUCTION NOISE NEAR AIRPORTS WERE RATED BY  
DETERMINING THE CHANGES IN LAND AREAS FALLING WITHIN  
THE NOISE EXPOSURE FORECAST CONTOURS. SETS  
OF NEF CONTOURS WERE CONSTRUCTED FOR TWO DIFFERENT  
AIRCRAFT TYPES OPERATING FROM A SINGLE RUNWAY  
AIRPORT; THE NUMBER OF OPERATIONS PER DAY WAS VARIED  
FROM 200 TO 1000. THE CHANGES INCLUDED POWER  
CUTBACKS AFTER TAKEOFF, TWO SEGMENT APPROACHES AND  
RETROFIT OF FOUR-ENGINE TURBOFAN AIRCRAFT WITH  
ACOUSTICALLY-LINED NACELLES OR WITH A 'QUIET ENGINE'.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 697 377 6/17 2/5  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

EVALUATION OF CANINE EAR DEFENDERS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 68-MAR 69,  
AUG 69 15P BEULKE, DONALD L. SIMMONDS,  
RICHARD C. ;  
REPT. NO. SAM-TR-69-44  
PROJ: AF-7753  
TASK: 775311

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EAR PROTECTORS, EFFECTIVENESS), (\*DOGS,  
EAR PROTECTORS), FEASIBILITY STUDIES, HEARING, JET PLANE  
NOISE (U)

CONCERN FOR HEARING IMPAIRMENT OF AIR FORCE PERSONNEL AS A RESULT OF TURBOJET NOISE LED AIR FORCE VETERINARIANS TO SPECULATE THAT SIMILAR IMPAIRMENT MAY OCCUR AMONG AIR FORCE SENTRY DOGS. IT WAS THE PURPOSE OF THIS PROJECT TO DEVELOP AND TEST CANINE EAR DEFENDERS AND TO EVALUATE THE FEASIBILITY OF USING THEM IN AIR FORCE DOGS. THREE BASIC TYPES OF EAR DEFENDERS WERE DEVELOPED: UNIVERSAL EARPLUGS, MOLDED EARPLUGS, AND EXTERNAL EARMUFFS. EIGHTEEN DOGS WERE USED TO EVALUATE THE EAR DEFENDERS UNDER CONDITIONS RANGING FROM ACOUSTICAL CHAMBER TO FLIGHT-LINE RUNUP OF OPERATIONAL AIRCRAFT. EXHAUST NOISE LEVELS, AS RECORDED, RANGED TO 128 DB AT ALL FREQUENCIES (20 HZ TO 20 KHZ) AND INTAKE NOISE LEVELS RANGED TO 115 DB AT ALL FREQUENCIES. NONE OF THE DOGS SHOWED ANY APPREHENSION TO, OR DISCOMFORT FROM, THE NOISE WITHOUT EARPLUGS, ALTHOUGH ONE DOG GAVE EVIDENCE OF SOMATIC DAMAGE FROM THE 128 DB NOISE LEVEL. IT WAS, THEREFORE, IMPOSSIBLE TO ESTABLISH AN END POINT FOR TESTING THE PROTECTIVE DEVICES. EARPLUGS WERE REJECTED AS A MEANS OF PROTECTION BECAUSE ONLY 1 OF THE 18 DOGS WOULD TOLERATE THEM. EARMUFFS WERE ALSO REJECTED BECAUSE THE POSITION OF THE CANINE EARS PRECLUDED ADEQUATE APPLICATION OF THE MUFFS. RECOMMENDATION WAS MADE TO ROTATE AND SELECTIVELY STATION DOGS FOUND APPREHENSIVE OF NOISE. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 698 398 5/4 20/1 1/3  
SANTA CLARA UNIV CALIF

THE ROAR, THE WHINE, THE BOOM AND THE LAW: SOME  
LEGAL CONCERNS ABOUT THE SST, (U)

69 40P HUARD, LEO A. ;

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN SANTA CLARA LAWYER, V9 N2  
P189-226 1969.

SUPPLEMENTARY NOTE: SPONSORED BY NATIONAL AERONAUTICS  
AND SPACE ADMINISTRATION, WASHINGTON. D. C.

DESCRIPTORS: (\*LAW, \*SONIC BOOM), (\*JET TRANSPORT  
PLANES, \*COMMERCIAL PLANES), (\*SUPERSONIC AIRCRAFT,  
LAW), JET PLANE NOISE, JET ENGINE NOISE, AIRPORTS,  
AIRCRAFT INDUSTRY, REACTION(PSYCHOLOGY) (U)  
IDENTIFIERS: NOISE POLLUTION, \*SUPERSONIC  
TRANSPORTS (U)

THE INQUIRY SHOWS THAT SUPERSONIC AIRPLANES MAY  
BRING ABOUT A CHANGE IN THE QUANTITY OF AIRPORT  
NOISE, BUT THEY ARE NOT LIKELY TO AFFECT THE QUALITY  
OF THAT NOISE. IT SEEMS UNLIKELY THAT THE SST  
WILL TRIGGER RADICAL REFORMS IN THE LEGAL RULES  
APPLICABLE TO AIRPORT NOISE, BECAUSE THEY SIMPLY WILL  
NOT MAKE A RADICAL PHYSICAL CHANGE IN SUCH NOISE.  
THE AIRPORT NOISE PROBLEM CRIES OUT FOR A CURE  
WITHOUT THE SST, AND THE ADVENT OF THAT TYPE OF  
AIRCRAFT WILL NOT IMPROVE THE SITUATION, BUT IT WILL  
NOT MAKE IT MUCH WORSE EITHER. REFORM OF 'AIRPORT'  
LAW WILL NOT FIND ITS RAISON D'ETRE IN THE SST AND  
REFORMERS MUST SEEK THEIR IMPETUS ELSEWHERE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 699 593 20/1 1/3 6/19  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

MEASUREMENT AND ANALYSIS OF BIOACOUSTIC ENVIRONMENTS  
ABOARD AC-119G AND AC-130A GUNSHIPS. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP-NOV 68,  
SEP 69 40P ROSE, JUSTUS F., JR.  
REPT. NO. AMRL-TR-68-176  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TRANSPORT AIRCRAFT, AIRCRAFT NOISE),  
(\*HEARING, PROTECTION), (\*AIRCRAFT NOISE, MEASUREMENT),  
TAXIING, TAKEOFF, CLIMBING, LEVEL FLIGHT, AIRCRAFT GU(U)  
IDENTIFIERS: AC-119G AIRCRAFT, AC-130A AIRCRAFT,  
AIRCRAFT, CONTRACT END ITEM DETAIL SPECIFICATION, C-  
130 AIRCRAFT, C-119 AIRCRAFT, GUNSHIPS (U)

ACOUSTIC NOISE MEASUREMENTS WERE MADE AT CREWMEMBER  
LOCATIONS ON BOARD AN AC-119G AND AC-130A  
GUNSHIP. MEASUREMENTS WERE MADE DURING TAXI,  
TAKEOFF, CLIMB, AND CRUISE POWER SETTINGS. IN  
ADDITION, MEASUREMENTS WERE TAKEN DURING FIRING OF  
THE FOUR 7.62 MM MINIGUNS ON THE AC-119G AND THE  
FOUR 7.62 MM MINIGUNS AND FOUR 20MM VULCANS ON THE  
AC-130A. MEASUREMENTS WERE AT TYPICAL  
CREWMEMBER LOCATIONS THROUGHOUT EACH AIRCRAFT DURING  
VARIOUS WEAPON COMBINATION FIRING CONFIGURATIONS.  
THE DATA ARE PRESENTED IN DATA ZONES AND EACH ZONE  
IS SHOWN ATTENUATED BY EACH OF FOUR IN-SERVICE EAR  
PROTECTION DEVICES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 699 915 20/1 1/2  
DEPARTMENT OF TRANSPORTATION WASHINGTON D C LIBRARY  
SERVICES DIV

AIRCRAFT NOISE AND SONIC BOOM. SELECTED  
REFERENCES.

(U)

DEC 69 46P  
REPT. NO. BIBLIOGRAPHIC LIST-2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SONIC BOOM, \*BIBLIOGRAPHIES), (\*AIRCRAFT  
NOISE, BIBLIOGRAPHIES), MEASUREMENT, CONTROL, REDUCTION,  
STRUCTURES, RESPONSE, REACTION(PSYCHOLOGY), AIRPLANE  
ENGINE NOISE, LAW

(U)

IDENTIFIERS: \*NOISE POLLUTION

(U)

CONTENTS: BIBLIOGRAPHIES; AIRCRAFT NOISE  
(GENERAL, MEASUREMENT, CONTROL, HUMAN  
RESPONSE); SONIC BOOM (GENERAL, GENERATION  
AND PROPAGATION, REDUCTION, HUMAN RESPONSE,  
STRUCTURAL RESPONSE, MISCELLANEOUS EFFECTS);  
LEGAL ASPECTS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 702 101 20/1 1/3  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

NOISE GENERATED BY SECONDARY AND AUXILIARY AIRCRAFT  
SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 1 NOV 67-1 NOV 68,  
DEC 69 27P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-69-83  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, REVIEWS), GFAR NOISE,  
TRANSMISSIONS(MECHANICS), AIRCRAFT EQUIPMENT, AIR  
CONDITIONING EQUIPMENT, AUXILIARY POWER PLANTS,  
AERODYNAMIC NOISE, AEROELASTICITY (U)

A VARIETY OF NOISE-GENERATING MECHANISMS CONTRIBUTE  
TO THE OVERALL NOISE ENVIRONMENT ENCOUNTERED WITHIN  
FIXED- AND ROTARY-WING AIRCRAFT. THE REPORT  
CONTAINS DESCRIPTIONS AND ILLUSTRATIONS OF SECONDARY  
AND AUXILIARY SYSTEMS FOUND WITHIN AIRCRAFT WHICH  
CONTRIBUTE TO THE COMPOSITE NOISE. TYPES OF NOISE-  
GENERATING MECHANISMS INCLUDE: (1)  
TRANSMISSION, GEAR-REDUCTION, AND SHAFT DISTRIBUTION  
SYSTEMS; (2) AIR-CONDITIONING AND PRESSURIZATION  
SYSTEMS; (3) DEFROSTING SYSTEMS; (4) AIR-  
DISTRIBUTION DUCTS AND VENTS, AND AIR- CIRCULATING  
AND BLOWER UNITS; (5) GROUND AND AIRBORNE  
AUXILIARY POWER UNITS AND SYSTEMS; AND (6)  
AERODYNAMIC AND AEROELASTIC DISTURBANCES, INCLUDING  
DEVICES SUCH AS AIR BRAKES AND LANDING GEAR.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 702 422 20/1 6/19 1/3  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

NOISE ENCOUNTERED IN ROTARY-WING AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 62-APR 69,  
DEC 69 33P GASAWAY, DONALD C. I  
REPT. NO. SAM-TR-69-87  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELICOPTERS, \*AIRCRAFT NOISE), HELICOPTER  
ROTORS, POWER SUPPLIES, NOISE GENERATORS, HEARING (U)

THE ACOUSTIC ENVIRONMENT WITHIN ROTARY-WING  
AIRCRAFT CONSISTS OF A MIXTURE OF NOISES. THE  
REPORT IDENTIFIES, DESCRIBES, AND ILLUSTRATES THE  
PRIMARY AND SECONDARY NOISE-PRODUCING MECHANISMS  
ASSOCIATED WITH HELICOPTER OPERATION. THE NOISE  
SOURCES INCLUDE MAIN ROTORS, ANTITORQUE ROTORS, MAIN  
AND SECONDARY TRANSMISSION AND GEAR-SHAFT  
DISTRIBUTION SYSTEMS, AND AUXILIARY POWER UNITS. IN  
ADDITION TO DESCRIBING SPECIFIC NOISE GENERATORS, THE  
REPORT PRESENTS COMPOSITE NOISE ENVELOPES  
ILLUSTRATING TYPICAL NOISE ENVIRONS OF ROTARY-WING  
VEHICLES HAVING DIFFERENT CONFIGURATIONS OF ROTOR -  
TO - POWER PLANT MATINGS. ALTERATIONS IN INTERNAL  
NOISE WHICH OCCUR DURING CONDITIONS OF HOVER AND  
FORWARD FLIGHT ARE DESCRIBED AND AEROMEDICAL FACTORS  
SUCH AS SPEECH INTERFERENCE AND POTENTIAL AUDITORY  
RISK ARE IDENTIFIED. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 705 964 20/1 1/3 6/19  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TX

COCKPIT NOISE EXPOSURES ASSOCIATED WITH THE  
OPERATION OF FIXED-AND ROTARY-WING AIRCRAFT. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 66-JUL 69,  
APR 70 21P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-70-21  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*EXPOSURE(PHYSIOLOGY)),  
(\*COCKPITS, \*AIRPLANE ENGINE NOISE), LEVEL FLIGHT,  
FLIGHT CREWS, FREQUENCY (U)  
IDENTIFIERS: ROTARY WING AIRCRAFT (U)

NOISE LEVELS MEASURED WITHIN THE COCKPITS OF 126  
FIXED- AND ROTARY-WING AIRCRAFT WERE TABULATED AND  
ARRANGED INTO STEREOTYPED SETS OF EXPOSURE ENVELOPES.  
THE NOISE DATA FROM WHICH THESE ENVELOPES WERE  
DERIVED REPRESENT 'TYPICAL' UNPROTECTED EXPOSURES  
ENCOUNTERED WITHIN 12 DIFFERENT CATEGORIES OF FIXED-  
AND ROTARY-WING AIRCRAFT DURING CONDITIONS OF 'NORMAL  
CRUISE.' EXTREME OR UNIQUE NOISE EXPOSURES WERE  
DELETED FROM THE STUDY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 708 430 20/1 21/5  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

NOISE ENVIRONMENTS WITHIN MULTIPLACE FIXED-WING  
AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 65-DEC 69,  
MAY 70 22P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-70-26  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HEARING, PROTECTION), (\*AIRPLANE ENGINE  
NOISE, STATISTICAL ANALYSIS), TURBOPROP ENGINES,  
TURBOJET ENGINES, AIR-BREATHING ENGINES UNCONVENTIONAL),  
WINGS, COCKPITS, LEVEL FLIGHT, SPEECH RECOGNITION (U)

NOISE ENVIRONMENTS WITHIN VARIOUS MULTIPLACE FIXED-  
WING AIRCRAFT DEMONSTRATE DIFFERENCES RELATED TO THE  
PROXIMITY OF THE OCCUPANT TO PRIMARY AND SECONDARY  
NOISE-GENERATING MECHANISMS. THE REPORT DEFINES  
ACOUSTIC ENVIRONMENTS SAMPLED AT DIFFERENT LOCATIONS  
WITHIN EIGHT GROUPS OF FIXED-WING AIRCRAFT DURING  
CONDITIONS OF NORMAL CRUISE. A TOTAL OF 51  
AIRCRAFT, REPRESENTATIVE OF VEHICLES POWERED BY  
RECIPROCATING, TURBOPROPELLER, AND TURBOJET OR  
TURBOFAN ENGINES, PROVIDED THE DATA FROM WHICH 28  
NOISE ENVELOPES WERE PLOTTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 70A 816 20/1  
WYLE LABS HUNTSVILLE ALA

THE NOISINESS OF DIFFUSE SOUND FIELDS AT HIGH  
INTENSITIES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

AUG 69 103P OLLERHEAD, J. B. ;  
REPT. NO. WR-69-17  
CONTRACT: FA-68-WA-1971  
MONITOR: FAA 70-3

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PSYCHOPHYSICS, \*AIRCRAFT NOISE), (\*NOISE,  
MEASUREMENT), STRESS(PHYSIOLOGY), CIVIL AVIATION,  
AUDITORY PERCEPTION, THRESHOLDS(PHYSIOLOGY), FREQUENCY,  
INTENSITY, NOISE GENERATORS, TEST FACILITIES,  
MATHEMATICAL MODELS, DISTORTION, TEST METHODS (U)  
IDENTIFIERS: NOISE POLLUTION, REVERBERATION CHAMBERS,  
SOUND PRESSURE (U)

AN EXPERIMENTAL STUDY WAS CONDUCTED TO ESTABLISH  
THE RELATIONSHIPS BETWEEN THE SURJECTIVE NOISINESS,  
FREQUENCY AND SOUND PRESSURE LEVEL OF RANDOM NOISE IN  
A DIFFUSE ACOUSTIC FIELD. THE EXPERIMENTS WERE  
PERFORMED IN A FABRIC ENCLOSURE INSTALLED WITHIN A  
100,000 CURIC FOOT REVERBERANT CHAMBER. TWENTY-FOUR  
SUBJECTS TOOK PART. THE GROWTH OF NOISINESS WITH  
SOUND PRESSURE LEVEL OF AN OCTAVE BAND OF NOISE  
CENTERED AT 1000 HZ WAS DETERMINED. THE  
VARIATION OF NOISINESS WITH FREQUENCY WAS MEASURED AT  
FOUR PERCEIVED NOISE LEVELS BETWEEN 78 AND 104  
PNDB. FOR COMPARISON PURPOSES, ONE EQUAL  
NOISINESS CONTOUR WAS ALSO DETERMINED FOR FREE FIELD  
LISTENING CONDITIONS IN A PROGRESSIVE WAVE CHAMBER.  
THE RESULTS INDICATED THAT CURRENTLY USED NOISINESS  
GROWTH FUNCTIONS ARE ADEQUATE BUT THAT THE EQUAL  
NOISINESS CONTOURS MAY NEED SOME MODIFICATION AT LOW  
FREQUENCIES. ALSO THE CONTOUR SHAPES VARY AS SOUND  
PRESSURE LEVEL INCREASES INDICATING RELATIVELY  
GREATER NOISE SENSITIVITY AT BOTH HIGH AND LOW  
FREQUENCIES. (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 710 525 20/1 1/2 1/5  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

NOISE EXPOSURE FORECAST CONTOURS FOR AIRCRAFT NOISE  
TRADEOFF STUDIES AT THREE MAJOR AIRPORTS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 70 62P BISHOP, DWIGHT E. ; HORONJEFF,  
RICHARD D. ;  
REPT. NO. BRN-1858  
CONTRACT: FA-68-WA-1900  
MONITOR: FAA-NO 70-7

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, CONTROL), (\*AIRPORTS,  
JET PLANE NOISE), TAKEOFF, APPROACH, ENGINE NACELLES,  
STATISTICAL ANALYSIS (U)  
IDENTIFIERS: LOS ANGELES INTERNATIONAL AIRPORT, O'HARE  
INTERNATIONAL AIRPORT, JOHN F. KENNEDY INTERNATIONAL  
AIRPORT (U)

THE RELATIVE EFFECTIVENESS OF THREE CHANGES IN  
AIRCRAFT OPERATING PROCEDURES AND/OR AIRCRAFT  
HARDWARE IN REDUCING NOISE EXPOSURE AROUND THREE  
MAJOR AIRPORTS (O'HARE INTERNATIONAL AIRPORT,  
CHICAGO, JOHN F. KENNEDY AIRPORT, NEW  
YORK, AND LOS ANGELES INTERNATIONAL  
AIRPORT) WERE RATED BY DETERMINING THE RELATIVE  
CHANGE IN LAND AREAS FALLING WITHIN NOISE  
EXPOSURE FORECAST (NEF) 30 AND 40 CONTOURS.  
FOR PROJECTED 1975 OPERATIONS, SETS OF NEF  
CONTOURS WERE CALCULATED FOR CHANGES WHICH  
INCLUDED: POWER CUTBACKS AFTER TAKEOFF AND TWO  
SEGMENT APPROACHES FOR ALL AIRCRAFT, AND RETROFIT OF  
CURRENT FOUR-ENGINE TURBOFAN AIRCRAFT WITH EITHER  
ACOUSTICALLY - LINED NACELLES OR WITH A 'QUIET'  
ENGINE UNDER DEVELOPMENT BY NASA. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 711 131 20/1

BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

NOISE EXPOSURE FORECASTS: EVOLUTION, EVALUATION,  
EXTENSIONS, AND LAND USE INTERPRETATIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

AUG 70 80P GALLOWAY, WILLIAM J. ; BISHOP,

DWIGHT E. ;

CONTRACT: DOT-FA68WA-1900

MONITOR: FAA-NO 70-9

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, PREDICTIONS),  
PSYCHOACOUSTICS, AIRPORTS, JET PLANE NOISE, INTENSITY,  
AUDITORY PERCEPTION (U)  
IDENTIFIERS: \*NOISE POLLUTION, NOISE EXPOSURE, \*LAND  
USE (U)

PART I DESCRIBES THE EVOLUTION OF METHODS FOR  
RELATING AIRCRAFT NOISE EXPOSURE TO COMMUNITY  
RESPONSE IN THIS COUNTRY, STARTING WITH THE ORIGINAL  
COMPOSITE NOISE RATING (CNR) CONCEPT  
DEVELOPED IN 1952, AND WITH APPLICATIONS SPECIFICALLY  
TO AIRCRAFT NOISE IN 1957 UNDER AIR FORCE  
SPONSORSHIP. THE DEVELOPMENT OF CNR PROCEDURES  
FOR CIVIL AND MILITARY AIRCRAFT IN 1962 UTILIZING  
PERCEIVED NOISE LEVEL CONTOURS AND THE DEVELOPMENT OF  
NOISE EXPOSURE FORECAST (NEF) PROCEDURES IN  
1967 UTILIZING EFFECTIVE PERCEIVED NOISE LEVEL DATA  
ARE RECOUNTED AND COMPARED. PART II INTERPRETS  
THE NOISE EXPOSURE DUE TO AIRCRAFT OPERATIONS, AS  
EXPRESSED IN NOISE EXPOSURE FORECAST (NEF)  
VALUES, IN TERMS OF ESTIMATED IMPACT ON LAND USES.  
ASSESSMENTS OF THE LAND USE COMPATIBILITY WITH  
AIRCRAFT NOISE AS A FUNCTION OF NEF VALUES ARE  
GIVEN FOR A VARIETY OF LAND USES FOR THE PURPOSE OF  
PROVIDING GUIDES IN LAND USE PLANNING, ZONING AND IN  
LAND USE DEVELOPMENT AND BUILDING CONSTRUCTION.  
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 711 359 20/1

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

AIRSPED INFLUENCE ON NOISE WITHIN FIXED- AND  
ROTARY-WING AIRCRAFT.

(U)

DESCRIPTIVE NOTE: RESEARCH REPT. JAN 66-OCT 69,

JUN 70 21P GASAWAY, DONALD C. ;

REPT. NO. SAM-TR-70-27

PROJ: AF-7755

TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*AIRSPEED), COCKPITS,  
SPEECH, INTERFERENCE, INTELLIGIBILITY, PROPELLER NOISE,  
ROTARY WINGS, AIRPLANE ENGINE NOISE (U)

THE INFLUENCE OF INCREASED MOTIVE POWER AND  
AIRSPEED ON NOISE LEVELS WITHIN 163 FIXED- AND  
ROTARY-WING AIRCRAFT IS DEPICTED IN 9 NOISE-EXPOSURE  
ENVELOPES. INCREASED POWER AND AIRSPEED RESULTED IN  
INCREMENTS IN COCKPIT NOISE IN ALL OF THESE AIRCRAFT  
GROUPS. CHANGES IN ACOUSTIC SPECTRA AND SPEECH  
INTERFERENCE ARE ILLUSTRATED AND DESCRIBED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 711 910 20/1 17/1  
NATIONAL ACADEMY OF SCIENCES-NATIONAL RESEARCH COUNCIL  
WASHINGTON D C COMM ON HEARING BIOACOUSTICS BIOMECHANICS

SONAR DETECTION OF SUBMARINES BY HELICOPTER. (U)

AUG 70 10P  
CONTRACT: NONR-2300(05)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT OF WORKING GROUP 54,  
PETER WESTERVELT, CHAIRMAN.

DESCRIPTORS: (\*AIRPLANE ENGINE NOISE, AUDITORY SIGNALS),  
(\*SONAR EQUIPMENT, ANTISUBMARINE AIRCRAFT),  
(\*HELICOPTERS, SONAR PERSONNEL), HELMETS, ATTENUATION,  
ACOUSTIC FILTERS, ACOUSTIC INSULATION, HEARING,  
THRESHOLDS(PHYSIOLOGY), EARPHONES, HUMAN FACTORS  
ENGINEERING (U)

THE REPORT ADVISES THE MILITARY SERVICES CONCERNING  
MEANS FOR IMPROVING THE EFFICIENCY OF THE SEARCH  
TECHNIQUE OF SONAR OPERATORS AND CREW MEMBERS  
INVOLVED IN SEARCHING FOR SUBMARINES BY MEANS OF  
HELICOPTER-BORNE EQUIPMENT. MEASURES ARE ALSO  
SUGGESTED FOR PROTECTING THE HEARING OF THE SONAR  
OPERATOR AND THE CREW OF THE HELICOPTER.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 712 646 20/1 1/5 13/2  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

NOISE EXPOSURE FORECAST CONTOURS FOR 1967, 1970  
AND 1975 OPERATIONS AT SELECTED AIRPORTS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 70 274P BISHOP, DWIGHT E. ; SIMPSON,  
MYLES A. ;  
CONTRACT: FA-68-WA-1900  
MONITOR: FAA-NO 70-8

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, PREDICTIONS), (\*AIRPORTS,  
AIRCRAFT NOISE), AUDITORY PERCEPTION, COMMERCIAL  
PLANES (U)  
IDENTIFIERS: \*NOISE POLLUTION, FORECASTING, LAND  
USE (U)

NOISE EXPOSURE FORECAST (NEF) CONTOURS  
RESULTING FROM 1967, 1970, AND 1975 AIRCRAFT  
OPERATIONS ARE DEPICTED FOR 28 AIRPORTS. INCLUDED  
ARE CONTOURS FOR LARGE, MEDIUM AND SMALL COMMERCIAL  
AIRPORTS AND GENERAL AVIATION AIRPORTS. THE NEF  
CONTOURS DEFINE LAND AREAS HAVING DIFFERENT LAND-USE  
COMPATIBILITY WITH RESPECT TO AIRCRAFT NOISE; HENCE,  
THE NEF AREAS MAY BE USED AS A GUIDE TO LAND-USE  
PLANNING AND ZONING AND AIRPORT DEVELOPMENT. THE  
NEF CONTOURS ARE BASED UPON THE AIRCRAFT NOISE  
DESCRIBED IN TERMS OF EFFECTIVE PERCEIVED NOISE  
LEVELS (WHICH INCLUDES CORRECTIONS FOR DURATION AND  
PRESENCE OF DISCRETE FREQUENCIES) PLUS ADJUSTMENTS  
FOR THE NUMBER OF OPERATIONS FOR DAYTIME AND  
NIGHTTIME PERIODS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 712 667 20/1 1/3 5/5  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

NOISE ASSOCIATED WITH OPERATION OF AIR FORCE OV-10A AIRCRAFT. (U)

DESCRIPTIVE NOTE: FINAL REPT. APR-MAY 70,  
AUG 70 20P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-70-51  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, SHORT TAKEOFF AIRCRAFT),  
(\*SHORT TAKEOFF AIRCRAFT, HUMAN FACTORS ENGINEERING),  
(\*RECONNAISSANCE AIRCRAFT, AIRCRAFT NOISE), AVIATION  
MEDICINE, UTILITY AIRCRAFT, OBSERVATION AIRCRAFT,  
AUDITORY PERCEPTION, COCKPITS (U)  
IDENTIFIERS: V-10 AIRCRAFT, OV-10A AIRCRAFT, COIN  
AIRCRAFT (U)

NOISE MEASUREMENTS ARE DESCRIBED FOR NEAR-FIELD  
POSITIONS DURING ENGINE-STARTING AND PRE-TAKEOFF  
PHASES OF THE OV-10A AIRCRAFT. THE INTERNAL  
NOISE ENVIRONMENT DURING VARIOUS PHASES OF GROUND AND  
AIRBORNE OPERATIONS IS DESCRIBED AND ILLUSTRATED.  
FEATURES OF AEROMEDICAL IMPORTANCE ARE EMPHASIZED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 712 734 20/1 5/10  
BOLT BERANEK AND NEWMAN INC VAN NUYS CALIF

THE EFFECTS OF TEMPORAL AND SPECTRAL COMBINATIONS ON  
THE JUDGED NOISINESS OF AIRCRAFT SOUNDS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

JUN 69 82P PEARSONS, KARL S. ; BENNETT,  
RICARDA L. ;  
REPT. NO. BRN-1722  
CONTRACT: FA-68-WA-1978  
MONITOR: FAA-NO 69-3

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*PSYCHOACOUSTICS),  
VERTICAL TAKEOFF AIRCRAFT, HELICOPTERS, TURBOFAN  
ENGINES, TURBOJET ENGINES, TURBOPROP ENGINES, FREQUENCY,  
STUDENTS, ACOUSTIC SIGNALS, TIME, SPECTRUM SIGNATURES,  
PERFORMANCE(HUMAN), MATHEMATICAL ANALYSIS, CORRECTIONS,  
ANECHOIC CHAMBERS (U)  
IDENTIFIERS: STIMULUS(PSYCHOPHYSIOLOGY) (U)

TESTS WERE PERFORMED IN AN ANECHOIC CHAMBER USING  
COLLEGE STUDENTS TO DETERMINE THE JUDGED NOISINESS OF  
STIMULI VARYING BOTH TEMPORALLY AND SPECTRALLY. THE  
INVESTIGATIONS WERE DIVIDED INTO THREE TEST SERIES.  
THE FIRST TEST SERIES USED THIRTY STIMULI WITH SIX  
DIFFERENT TIME PATTERNS AND FIVE DIFFERENT SPECTRA.  
THE SECOND TEST USED STIMULI SELECTED FROM THE  
FIRST TEST BUT MODIFIED TO INCLUDE SIGNAL DURATIONS  
RANGING FROM 1 TO 100 SECONDS. DURATION IN THIS  
CASE IS THE AMOUNT OF TIME THE STIMULI WERE WITHIN 10  
DB OF THE MAXIMUM LEVEL. THE STIMULI FOR THE  
THIRD TEST CONSISTED OF RECORDINGS OF TURBOPROP,  
TURBOFAN, TURBOJET AND HELICOPTER FLYOVERS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 715 222 20/1 1/3 6/19  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

NOISE ASSOCIATED WITH OPERATION OF THE C-9A  
(AEROMEDICAL EVACUATION) AIRCRAFT. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 68-MAR 70,  
OCT 70 27P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-70-63  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*AVIATION MEDICINE),  
(\*JET TRANSPORT PLANES, JET PLANE NOISE), OPERATION,  
EXPOSURE (PHYSIOLOGY), SPEECH, INTERFERENCE, HEARING,  
CONTROL (U)  
IDENTIFIERS: C-9 AIRCRAFT (U)

NOISE WITHIN THE DOUGLAS C-9A DURING VARIOUS  
PHASES OF OPERATION IS DESCRIBED AND ILLUSTRATED.  
NEAR-FIELD ACOUSTIC EXPOSURES ARE ALSO DISCUSSED  
AND ILLUSTRATED. DEGREES OF SPEECH INTERFERENCE  
AND AUDITORY RISK ARE DISCUSSED AND METHODS OF  
CONTROLLING POTENTIALLY UNDESIRABLE EFFECTS ARE  
PROPOSED. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 716 766 6/16 6/19  
NAVAL AEROSPACE MEDICAL RESEARCH LAB PENSACOLA FLA

A PROGRESS REPORT ON THE NAVAL AVIATORS'  
SPEECH DISCRIMINATION TEST, (U)

JUN 70 11P GREENE, JAMES W. ;  
REPT. NO. NAMRL-1110  
PROJ: MF12.524.005, A34-531/561/70F1252-44-02  
MONITOR: NAVMED MF12.524.005-7011B-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PILOTS, AUDITORY ACUITY), (\*TEST  
CONSTRUCTION(PSYCHOLOGY), EFFECTIVENESS), AIRCRAFT  
NOISE, HEARING, TEST METHODS, DAMAGE,  
PERFORMANCE(HUMAN), STATISTICAL DATA (U)

THE DOCUMENT IS CONCERNED WITH THE NAVAL  
AVIATORS' SPEECH DISCRIMINATION TEST (NASDT)  
WHICH IS USED TO PROVIDE AN OBJECTIVE BASIS FOR  
GRANTING WAIVERS TO SENIOR AVIATORS WHO FAIL TO MEET  
THE PURE-TONE HEARING STANDARDS BUT WHO EXPERIENCE NO  
HEARING DIFFICULTIES IN THEIR WORKING ENVIRONMENT.  
THE TEST IS ALSO ADMINISTERED TO GROUPS OF STUDENT  
AVIATORS AND PARTICIPANTS IN THE PENSACOLA  
'THOUSAND AVIATOR' STUDY. FROM AN ANALYSIS OF THE  
DATA THAT HAVE BEEN OBTAINED TO DATE, IT APPEARS THAT  
THE NASDT HAS FULFILLED ITS ORIGINAL PURPOSE AND  
HAS LED TO A MORE REALISTIC AND PRACTICAL EVALUATION  
OF THE HEARING OF SENIOR NAVAL AVIATORS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 716 814 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

ACOUSTIC ENVIRONMENTS PRODUCED BY THE C-5A  
AIRCRAFT DURING GROUND OPERATIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 69-APR 70,  
OCT 70 113P COLE, JOHN N. POWELL,  
ROBERT G. J  
REPT. NO. AMRL-TR-70-53  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*TAXIING), (\*JET  
TRANSPORT PLANES, JET PLANE NOISE), TAKEOFF, SPEECH,  
INTERFERENCE, AUDITORY PERCEPTION, EXPOSURE (PHYSIOLOG (U)  
IDENTIFIERS: \*NOISE POLLUTION, SOUND PRESSURE, C-5A  
AIRCRAFT, C-5 AIRCRAFT (U)

SOUND PRESSURE LEVELS PRODUCED BY THE C-5A  
AIRCRAFT DURING GROUND RUNUP AT IDLE, TAXI, AND  
TAKEOFF POWER SETTINGS WERE MEASURED AT LOCATIONS 200  
METERS RADIALY DISTANT FROM THE AIRCRAFT. THESE  
DATA WERE USED TO COMPUTE POWER SPECTRA, DIRECTIVITY  
INDICES, AND CONTOURS OF EQUAL SOUND PRESSURE LEVEL,  
A-WEIGHTED OVERALL SOUND LEVEL, PERMISSIBLE  
EXPOSURE TIME, SPEECH INTERFERENCE LEVEL AND  
PERCEIVED NOISE LEVEL (TONE-CORRECTED). THESE  
CONTOURS CAN BE USED TO ESTIMATE THESE QUANTITIES  
OVER A MAXIMUM RANGE FROM 125 TO 1500 METERS FROM THE  
AIRCRAFT DURING GROUND OPERATION FOR STANDARD  
METEOROLOGICAL CONDITIONS. MEASUREMENTS WERE ALSO  
MADE AT MORE THAN 40 LOCATIONS WHERE MAINTENANCE AND  
GROUND CREWS MUST TYPICALLY BE LOCATED DURING NORMAL  
OPERATIONS. A-WEIGHTED AND C-WEIGHTED OVERALL  
SOUND LEVELS AND PERMISSIBLE EXPOSURE TIMES WERE  
DETERMINED FOR PERSONNEL AT THESE LOCATIONS WITH AND  
WITHOUT EAR PROTECTION. PREFERRED SPEECH  
INTERFERENCE LEVELS WERE ALSO DETERMINED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 717 394 17/2 6/16  
CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA

AUDITORY PROCESSING FOR SPEECH  
INTELLIGIBILITY IMPROVEMENT,

(U)

APR 70 12P TOBIAS, JERRY V. ;  
MONITOR: FAA-AM 70-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SPEECH, \*INTELLIGIBILITY), (\*HEARING,  
SIGNAL-TO-NOISE RATIO), AUDITORY PERCEPTION, AUDITORY  
SIGNALS, AIRCRAFT NOISE, AVIATION SAFETY (U)

PILOTS OF LIGHT AIRCRAFT OFTEN SEEM TO PREFER  
LOUDSPEAKERS TO EARPHONES EVEN THOUGH COVERING THE  
EARS HELPS MOST OF THEM TO IMPROVE THE SIGNAL-TO-  
NOISE RATIO OF SPEECH TRANSMISSIONS, AND TO DECREASE  
THE PILOT'S EXPOSURE TO FATIGUING NOISE. THE  
AUDITORY-FATIGUE PROBLEM CAN BE HANDLED BY PILOT  
EDUCATION; THE PROBLEM OF DETERIORATING SIGNAL-TO-  
NOISE RATIOS, THOUGH, CAN BE APPROACHED NOT JUST BY  
PUTTING EARPHONES ON FLIERS BUT ALSO BY APPLYING TO  
THE LOUDSPEAKER SITUATION SOME OF THE THEORETICAL  
PRINCIPLES THAT HAVE LED TO TECHNIQUES OF APPARENT  
SIGNAL-LEVEL IMPROVEMENT AND REAL SPEECH-  
INTELLIGIBILITY IMPROVEMENT UNDER EARPHONES. THE  
HUMAN AUDITORY SYSTEM, APPROPRIATELY STIMULATED, IS  
CAPABLE OF CREATING THE EFFECT OF AN IMPROVED SIGNAL-  
TO-NOISE RATIO WITHOUT ACTUALLY CHANGING EITHER THE  
SIGNAL OR THE NOISE INTENSITIES. TESTS OF THESE  
TECHNIQUES SHOW THAT THEIR PROPER APPLICATION TO A  
LOUDSPEAKER-LISTENING SITUATION IS EQUIVALENT TO A 5-  
DB IMPROVEMENT IN SIGNAL-TO-NOISE RATIO. SINCE  
THE METHOD IS BASED IN THE HUMAN OBSERVER'S SIGNAL-  
PROCESSING ABILITY, IT REQUIRES NO SPECIAL EQUIPMENT  
IN THE AIRCRAFT. TWO LOUDSPEAKERS ARE USED, DRIVEN  
FROM THE SAME SIGNAL SOURCE, BUT WITH THE TWO  
SPEAKERS WIRED IN OPPOSITE PHASE TO EACH OTHER.  
WITHIN BROAD LIMITS, VARIATIONS IN SPEAKER  
PLACEMENT PERMIT THE IMPROVED RESULTS. THESE  
LIMITS ARE DEFINED. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 717 846 6/16  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TFX

STATUS OF PURE-TONE AUDIOMETRY IN USAF  
HEARING PROGRAMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 69-APR 70,  
NOV 70 20P GASAWAY, DONALD C. ;  
SUTHERLAND, HARRELL C. , JR;  
REPT. NO. SAM-TR-70-68  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIR FORCE PERSONNEL, AUDITORY  
PERCEPTION), (\*AUDIOMETRY, MILITARY MEDICINE), (\*JET  
PLANE NOISE, HAZARDS), MONITORS, PHYSICAL FITNESS,  
APTITUDE TESTS, THRESHOLDS(PHYSIOLOGY),  
TOLERANCES(PHYSIOLOGY)

(U)

IDENTIFIERS: HEARING CONSERVATION

(U)

PURE-TONE AUDIOMETRY IS USED IN THE U. S. AIR  
FORCE IN SUPPORT OF THREE TESTING PRO GRAMS:  
AUDIOMETRIC MONITORING OF PERSONS ROUTINELY EXPOSED  
TO POTENTIALLY HAZARDOUS NOISE; DETERMINING  
COMPLIANCE WITH PHYSICAL EXAMINATION PROFILES  
(ENTRANCE INTO GENERAL SERVICE AND CERTAIN CAREER  
FIELDS AND CONTINUANCE AND SEPARATION EVALUATIONS);  
AND DIAGNOSTIC EVALUATIONS (DIFFERENTIAL DIAGNOSIS  
AND AURAL REHABILITATION). THE REPORT PROVIDES  
INSIGHT CONCERNING THE STATUS OF AUDIOMETERS AND  
AUDIOMETRY USED AT USAF MEDICAL ACTIVITIES.  
MAJOR EMPHASIS IS GIVEN TO SIMPLE PURE-TONE  
AUDIOMETRY USED TO MONITOR THE HEARING OF PERSONS  
INCLUDED IN THE AIR FORCE HEARING CONSERVATION  
PROGRAM AND AUDIOMETRY PERFORMED TO DETERMINE  
PHYSICAL PROFILES. GUIDANCE IS PROVIDED CONCERNING  
PRIMARY AND SECONDARY FACTORS WHICH CONTRIBUTE TO  
ERRORS IN AUDIOMETRY. (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 717 852 20/1 6/19  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

COCKPIT NOISE WITHIN TRAINER AIRCRAFT. (U)

DESCRIPTIVE NOTE: FINAL REPT. FEB-OCT 70,  
DFC 70 22P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-70-95  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*COCKPITS), (\*TRAINING  
PLANES, AIRCRAFT NOISE), (\*AVIATION MEDICINE, PILOTS),  
HEARING, AUDITORY ACUITY, PROTECTION (U)

ROUTINE UNPROTECTED EXPOSURE TO ACOUSTIC NOISE  
WITHIN COCKPITS OF MANY TRAINER AIRCRAFT REPRESENTS  
POTENTIALLY HAZARDOUS STRESS. THE CHARACTER OF THE  
ACOUSTIC NOISE FOUND WITHIN THE COCKPITS OF FIXED-  
AND ROTARY-WING AIRCRAFT USED PRIMARILY FOR FLYING  
TRAINING IS DESCRIBED AND ILLUSTRATED. THE EFFECT  
OF VARIOUS MANEUVERS COMMONLY ENCOUNTERED IN TRAINING  
FLIGHTS ON COCKPIT NOISE IS EVALUATED, AND FACTORS OF  
AEROMEDICAL SIGNIFICANCE ASSOCIATED WITH NOISE IN  
TRAINER AIRCRAFT ARE IDENTIFIED AND DESCRIBED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 718 097 20/1 6/19  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TFX

NOISE ASSOCIATED WITH AIRBORNE OPERATION OF  
C-141A AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAR 69-28 FEB 70,  
DEC 70 33P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-70-74  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*AVIATION MEDICINE),  
OPERATION, SPEECH, INTERFERENCE, HEARING, CONTROL,  
REDUCTION

(U)

IDENTIFIERS: C-141A AIRCRAFT, C-141 AIRCRAFT

(U)

ACOUSTIC NOISE MEASUREMENTS OBTAINED WITHIN SEVERAL  
LOCKHEED C-141A AIRCRAFT DURING VARIOUS  
OPERATIONAL MISSIONS ARE REPORTED; FACTORS OF  
AEROMEDICAL SIGNIFICANCE ARE IDENTIFIED AND  
DESCRIBED; AND METHODS WITH WHICH UNDESIRABLE EFFECTS  
CAN BE CONTROLLED ARE PROPOSED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 71A 098 17/2 20/1  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

SIX INDICES FOR PREDICTING SPEECH  
INTERFERENCE WITHIN AIRCRAFT, (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL 1 OCT 68-6 JUL 70,  
DEC 70 35P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-70-72  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SPEECH, INTERFERENCE), (\*VOICE  
COMMUNICATIONS, INTELLIGIBILITY), (\*AIRCRAFT NOISE,  
AUDITORY PERCEPTION), AVIATION MEDICINE, MATHEMATICAL  
PREDICTION, ATTENUATION (U)

ACOUSTIC NOISE WITHIN AIRCRAFT DURING FLIGHT OFTEN  
CAUSES SOME DEGREE OF INTERFERENCE WITH AURAL  
COMMUNICATION. SEVERAL METHODS HAVE BEEN USED OVER  
THE YEARS TO IDENTIFY AND PREDICT DEGREES OF SPEECH  
INTERFERENCE. SIX OF THESE METHODS ARE  
DISCUSSED: FOUR INVOLVE OCTAVE-BAND AVERAGING; TWO  
USE FREQUENCY WEIGHTING. THE ASSESSMENT IS BASED ON  
APPLICATION OF EACH OF THE SIX INDICES TO NOISE  
LEVELS MEASURED WITHIN THE COCKPITS OF 191 FIXED-WING  
AND 58 ROTARY-WING AIRCRAFT, GROUPED INTO 11  
CATEGORIES BY ENGINE TYPE. EQUIVALENT SPEECH  
INTERFERENCE LEVELS OBTAINED FROM THE USE OF EACH OF  
THE SIX INDICES ARE PROVIDED FOR THE ACOUSTIC SPECTRA  
DEVELOPED FOR THE 11 CLASSES OF VEHICLES. THE  
OPERATIONAL CONSIDERATIONS WHICH INFLUENCE SPEECH  
INTERFERENCE VALUES ARE DESCRIBED. NOISE  
ATTENUATION PROVIDED BY HEADSET DEVICES COMMONLY USED  
BY AIR FORCE AIRCREW MEMBERS IS SHOWN FOR  
DIFFERENT GROUPS OF NOISE SPECTRA. CRITERIA ARE  
GIVEN FOR EVALUATING PROTECTED AND UNPROTECTED  
EXPOSURES TO NOISE THAT COMPROMISE COMMUNICATIONS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 721 010 20/1 1/3  
WYLE LABS INC HUNTSVILLE ALA RESEARCH STAFF

NOISE PRIMER FOR THE SUPERSONIC  
TRANSPORT.

(U)

MAR 71 34P  
CONTRACT: FA-SS-71-9

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT),  
(\*JET TRANSPORT PLANES, \*COMMERCIAL PLANES), SONIC BOOM,  
LAW, UNITED STATES GOVERNMENT, JET ENGINE NOISE,  
AIRPORTS, REDUCTION, URBAN AREAS (U)  
IDENTIFIERS: \*NOISE POLLUTION, \*SUPERSONIC  
TRANSPORTS (U)

THE FIRST AIM OF THE BOOKLET IS TO CLARIFY THE  
BASIC CONCEPTS AND TERMINOLOGY NECESSARY IN ANY  
DISCUSSION OF AIRPORT-COMMUNITY NOISE AND THE SST.  
THE SECOND AIM OF THE BOOKLET IS TO DESCRIBE THE  
EXPECTED NOISE OF THE PLANNED COMMERCIAL SST--USING  
THE TERMINOLOGY AND CONCEPTS DEVELOPED TO DESCRIBE  
AIRCRAFT NOISE. THIS DESCRIPTION TRIES TO PUT SST  
NOISE INTO PERSPECTIVE BY: SUMMARIZING THE  
STATUS OF THE MAJOR EFFORTS TO REDUCE SST NOISE;  
CLARIFYING SOME OF THE OLD NUMERICAL VALUES FOR  
SST NOISE WHICH HAVE CAUSED CONFUSION; COMPARING  
THE NOISE OF THE SST WITH THAT OF OTHER AIRPLANES  
IN TERMS OF CERTIFICATION NOISE LEVELS; AND SHOWING  
HOW THE AIRPORT-COMMUNITY NOISE FROM SST OPERATIONS  
FITS INTO THE NOISE PICTURE ALONG WITH THE NEW  
AIRPLANES OF THE FUTURE. (AUTHOR)

(U)



AD-A046 800

DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA  
ENVIRONMENTAL POLLUTION: NOISE POLLUTION-AIRPLANE NOISE.(U)  
NOV 77

F/6 5/2

UNCLASSIFIED

DDC/BIB-77/11

NL

2 OF 5  
AD  
A046 800



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 721 312 20/1 1/2  
BOEING CO PHILADELPHIA PA VERTOL DIV

AN INVESTIGATION OF NOISE GENERATION ON A  
HOVERING ROTOR.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 30 JUN 69-30 JAN 71,  
JAN 71 370P STERNFELD, H. ; SPENCER, R.  
H. ; SCHAIRER, J. O. ;  
REPT. NO. D210-10229-1  
CONTRACT: DAHC04-69-C-0087  
MONITOR: AROD 8704:2-E

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELICOPTER ROTORS, \*PROPELLER NOISE),  
HELICOPTERS, HOVERING, VORTICES, AIRCRAFT NOISE, ROTARY  
WINGS, TEST METHODS (U)

THIS REPORT PRESENTS THE RESULTS OF A PROGRAM OF  
HELICOPTER ROTOR NOISE MEASUREMENT. THE PROGRAM  
WAS CARRIED OUT USING A 60-FOOT DIAMETER CH-47B  
3-BLADED ROTOR ON THE BOEING-VERTOL ENGINEERING  
ROTOR WHIRL TOWER. THE PRIMARY OBJECTIVES WERE:  
TO OBTAIN ACOUSTICAL DATA OVER A FREQUENCY RANGE WIDE  
ENOUGH TO DEFINE ALL ELEMENTS OF ROTOR NOISE UNDER  
WELL-DOCUMENTED AMBIENT CONDITIONS, TO MEASURE THE  
TIP VORTEX POSITION WITH RESPECT TO A TRAILING BLADE  
USING HIGH-SPEED CAMERAS AND SMOKE TO VISUALIZE THE  
TIP VORTEX AND TO RELATE BLADE-VORTEX SEPARATION  
DISTANCE TO NOISE LEVEL, TO DETERMINE THE PROPAGATION  
CHARACTERISTICS OF ROTOR NOISE, AND TO EVALUATE TWO  
CURRENT ANALYTICAL PROCEDURES FOR PREDICTING ROTOR  
NOISE AGAINST THE MEASURED DATA. TIP SPEEDS RANGED  
FROM 600 TO 900 FPS AND THRUSTS RANGED FROM 6300 TO  
32,000 POUNDS (DISK LOAD 2.2 TO 11.3 POUNDS PER  
SQUARE FOOT). (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 722 365 20/1 1/5  
BOLT BERANFK AND NEWMAN INC CAMBRIDGE MASS  
NOISE EXPOSURE FORECAST CONTOURS FOR  
EXPECTED 1985 AND 1990 OPERATIONS AT SEVEN U.  
S. AIRPORTS. (U)

JAN 71 93P  
REPT. NO. BBN-2076

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, PREDICTIONS),  
(\*AIRPORTS, PLANNING), SUPERSONIC AIRCRAFT, COMMERCIAL  
PLANES, JET TRANSPORT PLANES, TAKEOFF, STATISTICAL DA(U)  
IDENTIFIERS: \*NOISE POLLUTION, \*SUPERSONIC TRANSPORT  
PLANES (U)

THE REPORT SUMMARIZES A STUDY OF THE PROBABLE  
IMPACT OF FUTURE SUPERSONIC TRANSPORT (SST)  
AIRCRAFT OPERATIONS ON THE NOISE ENVIRONMENT AROUND  
SEVEN AIRPORTS IN THE UNITED STATES. THE NOISE  
ENVIRONMENT IS DEPICTED IN TERMS OF NOISE  
EXPOSURE FORECAST (NEF) CONTOURS OF NEF 30  
AND 40 VALUES FOR PROJECTED 1985 AND 1990 OPERATIONS  
AT THE FOLLOWING SEVEN AIRPORTS: ANCHORAGE  
INTERNATIONAL AIRPORT (ANC); LOGAN  
INTERNATIONAL AIRPORT, BOSTON (BOS);  
HONOLULU INTERNATIONAL AIRPORT (HNL); JOHN  
F. KENNEDY INTERNATIONAL AIRPORT, NEW  
YORK (JFK); LOS ANGELES INTERNATIONAL  
AIRPORT (LAX); SEATTLE-TACOMA INTERNATIONAL  
AIRPORT (SEA); SAN FRANCISCO INTERNATIONAL  
AIRPORT (SFO). SETS OF NOISE CONTOURS ARE  
GIVEN FOR EACH AIRPORT FOR THE TWO PROJECTIONS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 722 366 20/1 1/2  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

EFFECTS OF SST TAKEOFF PROCEDURES ON NOISE  
EXPOSURE, AND REVIEW OF EPNL VARIATIONS WITH  
DISTANCE. (U)

APR 71 57P  
REPT. NO. BRN-2090  
CONTRACT: DOT-FA-SS-71-8

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*TAKEOFF), (\*SUPERSONIC  
AIRCRAFT, JET PLANE NOISE), COMMERCIAL PLANES, JET  
TRANSPORT PLANES, INTENSITY, AIRPORTS, AUDITORY  
PERCEPTION (U)  
IDENTIFIERS: \*SUPERSONIC TRANSPORTS, DISTANCE (U)

THE REPORT SUMMARIZES THE RESULTS OF A STUDY OF  
NOISE EXPOSURE FROM SUPERSONIC TRANSPORT (SST)  
OPERATIONS AND THE ESTIMATION OF CHANGES IN SST  
NOISE LEVELS WITH DISTANCE, FROM CURRENTLY AVAILABLE  
DATA. THE REPORT IS PRESENTED IN TWO PARTS. PART  
I DESCRIBES A STUDY OF THE EFFECTS OF SST TAKEOFF  
OPERATIONAL PROCEDURES ON AIRCRAFT NOISE EXPOSURE FOR  
A SIMPLIFIED AIRPORT SITUATION. FACTORS CONSIDERED  
INCLUDE AIRCRAFT MIX, TAKEOFF CLIMB PROFILES AND  
AIRCRAFT NOISE LEVELS. PART II DISCUSSES METHODS  
OF ESTIMATING VARIATIONS OF EFFECTIVE PERCEIVED NOISE  
LEVEL (EPNL) WITH SLANT DISTANCE FOR SST  
AIRCRAFT. EMPHASIS IS PLACED ON ESTIMATING THESE  
NOISE LEVELS AT LARGE DISTANCES BETWEEN THE AIRCRAFT  
AND THE OBSERVER. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 722 851 21/5 20/1  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

EXPLORATORY INVESTIGATION OF JET ENGINE  
SILENCING WITH PLUG NOZZLE CONFIGURATIONS,

(U)

APR 71 23P SCHARTON, TERRY D. ; PINKEL,  
BENJAMIN J. ; TOMOOKA, SUYEO ;  
REPT. NO. BRN-2089  
CONTRACT: DOT-FA-SS-71-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PLUG NOZZLES, FEASIBILITY STUDIES), (\*JET  
ENGINE NOISE, ATTENUATION), CONFIGURATION, NOZZLE GAS  
FLOW, ACOUSTIC IMPEDANCE, SUPERSONIC FLOW, NOZZLE  
THROATS, NOZZLE AREA RATIO, THRUST (U)

THE OBJECTIVE IN THE PRESENT EXPLORATORY  
INVESTIGATION WAS TO DETERMINE EXPERIMENTALLY WHETHER  
SIGNIFICANT SILENCING COULD BE OBTAINED WITH NOISE  
SUPPRESSORS THAT COULD BE CONVENIENTLY INCORPORATED  
WITHIN THE PLUG NOZZLE CONFIGURATION. THE 1/3-  
OCTAVE BAND SOUND POWER RADIATED BY THE PLUG NOZZLE  
INCORPORATING VARIOUS SUPPRESSOR CONCEPTS WAS  
COMPARED WITH THAT OF THE CONVENTIONAL CONVERGING-  
DIVERGING NOZZLE AND WITH THAT OF THE CONVENTIONAL  
MULTI-TUBE NOZZLE NOISE SUPPRESSOR. COMPARISONS  
WERE ALSO MADE OF THE MEASURED THRUST OF THE VARIOUS  
NOZZLES AND OF THE DIRECTIVITY OF THE RADIATED SOUND.  
SHADOW-GRAPH PICTURES OF THE FLOW FROM SOME OF THE  
NOZZLES WERE OBTAINED. THE TESTS WERE MADE MAINLY  
AT A RATIO OF NOZZLE TOTAL PRESSURE TO AMBIENT  
PRESSURE OF 3 WHICH IS REPRESENTATIVE OF THE PRESSURE  
RATIOS DURING TAKE-OFF IN HIGH PERFORMANCE TURBOJET  
ENGINES (JET MACH NUMBER APPROXIMATELY 1.4).  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 723 579            20/1            1/2  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS  
RESEARCH AND DEVELOPMENT SERVICE

AIRCRAFT NOISE STANDARDS AND  
REGULATIONS.

(U)

DESCRIPTIVE NOTE: SPEECH REPT. MAR-APR 71,  
APR 71    74P    POWER, JOSEPH K. ;  
REPT. NO.    FAA-RD-71-24

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*STANDARDS), (\*UNITED  
STATES GOVERNMENT, CIVIL AVIATION), JET ENGINE NOISE,  
SONIC BOOM, TAKEOFF, AIRCRAFT LANDINGS, AIRPORTS,  
TOLERANCES(PHYSIOLOGY)

(U)

THE PAPER DISCUSSES PUBLIC LAW 90-411 AND FAR  
PART 36 OF FEDERAL REGULATIONS. NOISE  
EXPOSURE FORECASTS AND VARIOUS SYSTEMS FOR RATING  
AIRCRAFT NOISE WORLD-WIDE ARE PRESENTED. NOISE  
CERTIFICATION AND AIRCRAFT RETROFIT REGULATIONS ARE  
DISCUSSED AS WELL AS AIRCRAFT OPERATIONAL PROCEDURES  
TO REDUCE NOISE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 724 586 1/2 20/1  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS  
RESEARCH AND DEVELOPMENT SERVICE

AN OPERATIONAL EVALUATION OF THE TWO-  
SEGMENT APPROACH FOR NOISE ABATEMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 71 21P CHURBOY, ROBERT A. ;  
REPT. NO. FAA-RD-71-21

UNCLASSIFIED REPORT

DESCRIPTORS: (\*INSTRUMENT LANDINGS, \*AIRCRAFT NOISE),  
(\*APPROACH, AIRCRAFT NOISE), GLIDE PATH SYSTEMS,  
GUIDANCE, COMPUTERS, JET TRANSPORT PLANES, COMMERCIAL  
PLANES (U)  
IDENTIFIERS: \*NOISE REDUCTION, DC-9 AIRCRAFT,  
EVALUATION (U)

THE REPORT PRESENTS THE RESULTS OF AN OPERATIONAL  
EVALUATION OF THE TWO-SEGMENT INSTRUMENT LANDING  
APPROACH FOR NOISE ABATEMENT PURPOSES. THE  
EVALUATION WAS PERFORMED USING A FAA DC-9 MODIFIED  
WITH A SELECTIVE GLIDE SLOPE (SEGS) COMPUTER  
WHICH PROVIDED THE VERTICAL GUIDANCE FOR THE UPPER  
SEGMENT. THE RESULTS INDICATE GENERAL ACCEPTABILITY  
OF THE TWO SEGMENT PROCEDURE FOR VFR OPERATIONS AND  
SUITABILITY FOR IFR EVALUATION. THE SEGS  
COMPUTER AS INSTALLED IN THE DC-9 WAS UNSUITABLE  
FOR IFR OPERATIONS; AUTOPILOT OPERATION, TRANSITION  
AND IMPROVED UPPER SEGMENT TERMINATION WARNINGS ARE  
REQUIRED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 727 345 20/1 1/3  
NATIONAL AERONAUTICAL ESTABLISHMENT OTTAWA (ONTARIO)

EFFECTIVE SOURCE DISTRIBUTION IN A CHOKED  
SCREECH JET, (U)

MAY 71 43P LEE, B. H. K. ; WESTLEY, R.

REPT. NO. NAE-LR-548  
MONITOR: NRC 12111

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRFRAMES, FATIGUE(MECHANICS)), (\*JET  
ENGINE NOISE, AIRFRAMES), MATHEMATICAL ANALYSIS, MODEL  
TESTS, SUPERSONIC NOZZLES, TEST EQUIPMENT, SOURCES,  
NOISE GENERATORS, FEEDBACK, FLOW FIELDS, STATISTICAL  
DISTRIBUTIONS (U)  
IDENTIFIERS: \*CHOKED SCREECH JETS, SOUND PRESSURE (U)

USING EXPERIMENTAL MEASUREMENTS OF THE SOUND  
PRESSURE AND PHASE IN THE NEAR FIELD OF A CHOKED  
SCREECH JET, A METHOD IS PROPOSED FOR COMPUTING THE  
EFFECTIVE SOURCE POSITIONS, THEIR STRENGTHS AND  
PHASES. TWO MODELS ARE CONSIDERED. THE FIRST  
ASSUMES A DISTRIBUTION OF POINT SOURCES ALONG THE JET  
AXIS AND THE SECOND ASSUMES RING SOURCES ALONG THE  
JET BOUNDARY INSTEAD. A TECHNIQUE OF MINIMIZATION  
DUE TO POWELL IS USED AND A SOLUTION IS OBTAINED  
WHEN THE SUM OF SQUARES REACHES A MINIMUM. RESULTS  
FOR A CHOKED JET AT A SCREECH FREQUENCY OF 3170 C/S  
ARE PRESENTED. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 729 067 20/1 6/19  
NAVAL ELECTRONICS LAB CENTER SAN DIEGO CALIF

NOISE LEVELS ON AIRCRAFT-CARRIER FLIGHT  
DECKS, AND THEIR EFFECTS.

(U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT REPT. 1 JUL-  
31 DFC 70,  
APR 71 47P WEBSTER, J. C. I  
REPT. NO. NELC-TR-1762  
PROJ: NELC-R505, SF14-224-001  
TASK: 4956

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*AVIATION MEDICINE),  
(\*HEARING, JET PLANE NOISE), (\*VOICE COMMUNICATION  
SYSTEMS, AUDITORY PERCEPTION), (\*FLIGHT DECKS, AIRPLANE  
NOISE), HAZARDS, AIRCRAFT CARRIERS, INTENSITY, JET  
FIGHTERS, SPEECH, INTERFERENCE (U)  
IDENTIFIERS: NOISE REDUCTION, CVA 63 VESSEL (U)

MEASUREMENTS WERE MADE OF NOISE LEVELS PRODUCED BY  
FOUR AIRCRAFT DURING PILOT QUALIFICATION EXERCISES  
ABOARD THE FLIGHT DECK OF USS KITTY HAWK. THESE  
MEASUREMENTS, ON BOTH THE A- AND C- FREQUENCY  
WEIGHTING NETWORKS, WERE AUGMENTED BY CALCULATIONS OF  
SPEECH-INTERFERENCE LEVELS MADE LATER FROM TAPE  
RECORDINGS. THESE DATA WERE COMPARED TO SIMILAR  
MEASUREMENTS MADE AT THE NAVAL AIR TEST  
CENTER AT PATUXENT RIVER, MD., AND  
INTERPRETED IN TERMS OF DEAFNESS RISK AND  
INTERFERENCE WITH SPEECH COMMUNICATIONS. THE LEVELS  
MEASURED ON THE CARRIER SHOWED LARGE AMOUNTS OF LOW-  
FREQUENCY ENERGY (AT OCTAVES CENTERED AT 62 AND 125  
HZ) NOT PRESENT IN THE DATA TAKEN ASHORE; THIS  
VARIATION IS ASCRIBED TO THE PRESENCE OF BLAST  
DEFLECTORS ON THE CARRIER AND TO THE EFFECTS OF  
STRONG WIND ACROSS THE DECK AND THE MEASURING  
MICROPHONE IN ITS WIND-SCREEN. THE NOISE LEVELS  
MEASURED ARE SHOWN TO SEVERELY DEGRADE SPEECH  
COMMUNICATIONS AND TO PRESENT A RISK OF DEAFNESS TO  
PERSONNEL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 729 184 1/3 20/1  
TACTICAL AIR COMMAND LANGLEY AFB VA OFFICE OF OPERATIONS  
ANALYSIS

STOL TRANSPORT PARAMETERS (MILITARY AND  
COMMERCIAL) WITH SPECIAL EMPHASIS ON  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 71 144P STICKLE, GEORGE W. ; BATTEN,  
BOBBY G. ;  
REPT. NO. TAC-OA-TR-70-17

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHORT TAKE-OFF PLANES, \*AIRPLANE NOISE),  
(\*TRANSPORT PLANES, AIRPLANE NOISE), LAW, REDUCTION,  
ATTENUATION, TURBOFAN ENGINES, JET ENGINE NOISE,  
PROPELLER NOISE, GAS TURBINES, COMMERCIAL PLANES, AIR  
POLLUTION (U)  
IDENTIFIERS: NOISE POLLUTION, NOISE REDUCTION (U)

A SHORT HANDBOOK APPROACH RELATING PHYSICAL AND  
ENVIRONMENTAL SELECTION PARAMETERS TO STOL  
TRANSPORT CAPABILITY IS PROVIDED. IT REVIEWS  
EXISTING LAWS AND REGULATIONS ON TRANSPORT NOISE  
ABATEMENT. IT REVIEWS THE NOISE FROM TURBOFAN  
POWERED TRANSPORTS AND DISCUSSES THE FUTURE RESEARCH  
AND DEVELOPMENT TRENDS AND NEEDS. IT PROVIDES AN  
INDEPTH ANALYSIS OF FREE TURBINE TURBOPROPELLER NOISE  
ABATEMENT PROVIDING ENGINEERING FORMULAS, EXAMPLES,  
AND EXPERIMENTAL DATA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 730 065 6/19  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE  
VA

EFFECT OF AVIATION NOISE ON SOME INDICES OF  
PROTEIN AND VITAMIN METABOLISM (VLIYANIE  
AVIATIONNOGO SHUMA NA NEKOTORYE POKAZATELI  
BELKOVOGO I VITAMINNOGO OBMENA),

(U)

AUG 71 10P UDALOV, YU. F. ; LAPAEV, E.  
V. ; SYZRANTSEV, YU. K. ;  
REPT. NO. FSTC-HT-23-272-71  
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM VOENNO-MEDITSINSKII  
ZHURNAL (USSR) N7 P61-64.

DESCRIPTORS: (\*AIRPLANE NOISE, \*STRESS(PHYSIOLOGY)),  
(\*PROTEINS, NOISE), (\*VITAMINS, NOISE), METABOLISM,  
ASTRONAUTICS, AVIATION PERSONNEL, PILOTS, GLUTAMIC ACID,  
CENTRAL NERVOUS SYSTEM, AMINO ACIDS, HAZARDS, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

RESEARCH RESULTS IN THIS REPORT POINT TO THE NEED  
FOR WIDER EMPLOYMENT OF VITAMINS AND GLUTAMIC ACID TO  
PREVENT THE DAMAGING EFFECTS OF NOISE ON FLYING  
PERSONNEL AND AIRCRAFT MAINTENANCE PERSONNEL.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 731 092 20/1 1/2  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

NOISE WITHIN THE F-4E DURING GROUND AND  
AIRBORNE OPERATIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. OCT 69-DEC 70,  
MAY 71 19P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-71-14  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*COCKPITS), (\*JET  
FIGHTERS, JFT PLANE NOISE), AVIATION MEDICINE, AIRBORNE,  
ACOUSTIC PROPERTIES, HEARING, VOICE COMMUNICATION  
SYSTEMS

(U)

IDENTIFIERS: F-4 AIRCRAFT, F-4E AIRCRAFT

(U)

NOISE LEVELS ENCOUNTERED WITHIN THE FRONT AND REAR  
COCKPITS OF THE F-4E (MCDONNELL-DOUGLAS)  
WERE OBTAINED DURING GROUND AND AIRBORNE OPERATIONS.  
THE ACOUSTIC FEATURES OF THE NOISE ENVIRONMENT, AS  
WELL AS FEATURES OF AUDITORY RISK AND VOICED  
COMMUNICATIONS, ARE DISCUSSED. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 731 128 20/1 1/2  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

NOISE ASSOCIATED WITH T-41A AND T-41C  
TRAINER AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. NOV 70-MAY 71,  
AUG 71 24P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-71-22  
PROJ: AF-7755  
TASK: 775508

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRPLANE NOISE, \*TRAINING PLANES),  
(\*COCKPITS, AIRPLANE NOISE), AIRBORNE, SPEECH,  
INTERFERENCE, VOICE COMMUNICATION SYSTEMS, HEARING,  
AVIATION MEDICINE  
IDENTIFIERS: T-41 AIRCRAFT

(U)

(U)

ACOUSTIC NOISE MEASUREMENTS WERE OBTAINED WITHIN  
CESSNA T-41A AND T-41C TRAINER AIRCRAFT  
DURING VARIOUS PHASES OF GROUND AND AIRBORNE  
OPERATION. FACTORS CONTRIBUTING TO SPEECH  
INTERFERENCE AND AUDITORY RISK WERE IDENTIFIED, AND  
RECOMMENDATIONS ARE PROVIDED RELATIVE TO IMPROVING  
VOICE COMMUNICATIONS AND REDUCING AUDITORY RISKS.  
AMBIENT NOISE WITHIN THE T-41A AND T-41C  
INTERFERES SIGNIFICANTLY WITH SPEECH, BUT THIS  
PROBLEM CAN BE REDUCED WHEN EARPLUGS, SUCH AS THE  
V-51R, ARE WORN. THE ATTENUATION PROVIDED BY  
THE V51R EARPLUGS SHOULD PREVENT TEMPORARY OR  
PERMANENT NOISE-INDUCED HEARING LOSS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 731 467 20/1

HUMAN ENGINEERING LABS ABERDEEN PROVING GROUND MD

BASELINE NOISE MEASUREMENTS OF THE OH-58A  
HELICOPTER.

(U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,

APR 71 72P LINC, DONALD L. ;

REPT. NO. HFL-TN-3-71

UNCLASSIFIED REPORT

DESCRIPTORS: (\*NOISE, \*HELICOPTERS), MACHINE GUNS,  
AIRPLANE NOISE, VOICE COMMUNICATION SYSTEMS,  
INTELLIGIBILITY, HEARING, HAZARDS, STATISTICAL DATA (U)

IDENTIFIERS: XM-27E1 GUNS(7.62-MM), MINIGUNS, M-27  
GUNS(7.62-MM), OH-58A AIRCRAFT, GRAPHS(CHARTS), H-58  
AIRCRAFT (U)

SOUND MEASUREMENTS WERE TAKEN IN THE OH-58A  
(KIOWA) HELICOPTER UNDER CONDITIONS OF MAXIMUM  
PERFORMANCE TAKE OFF AND CLIMB, NORMAL CRUISE,  
DESCENT AND HOVER BOTH WITH AND WITHOUT SOUNDPROOFING  
INSTALLED. MEASUREMENTS WERE TAKEN OF THE NOISE  
PRODUCED BY FIRING THE XM27E1 MINIGUN SYSTEM.  
INTELLIGIBILITY TESTS OF THE INTERCOM SYSTEM AND  
ONE RADIO RECEIVER WERE CARRIED OUT. RESULTS ARE  
PRESENTED AND COMPARED TO HUMAN ENGINEERING  
LABORATORIES STANDARD S-1-63B. HEARING  
HAZARD PRESENTED BY WEAPON FIRING IS DISCUSSED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 732 264 1/2 20/1 14/1  
ALL AMERICAN ENGINEERING CO WILMINGTON DEL

RESEARCH STUDY OF COST EFFECTIVENESS OF  
AUXILIARY LAUNCH SYSTEMS APPLICABLE TO  
COMMERCIAL TRANSPORTS FOR PURPOSES OF NOISE  
ABATEMENT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 71 270P HIGHLEY, F. M. ;  
CONTRACT: DOT-FA70WA-2224  
PROJ: FAA-550-004-03H  
MONITOR: FAA-EQ 71-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COMMERCIAL PLANES, \*AIRPLANE NOISE),  
(\*TRANSPORT PLANES, \*LAUNCHING), (\*CATAPULTS, COMMERCIAL  
PLANES), (\*COST EFFECTIVENESS, LAUNCHING), FEASIBILITY  
STUDIES, REDUCTION, TAKE-OFF, JETS, THRUST AUGMENTATION,  
EXHAUST GASES (U)  
IDENTIFIERS: \*NOISE POLLUTION (U)

A COST EFFECTIVENESS STUDY WAS MADE TO DETERMINE  
THE FEASIBILITY OF REDUCING THE NOISE ASSOCIATED WITH  
AIRCRAFT TAKING OFF BY APPLYING AUXILIARY LAUNCH  
POWER DURING AIRCRAFT ACCELERATION ON THE GROUND.  
AUXILIARY LAUNCH SYSTEM CATEGORIES CONSIDERED WERE  
REACTION JETS, CATAPULTS, AIRCRAFT EXHAUST  
AUGMENTATION, AND ACCELERATING VEHICLE SYSTEMS.  
THE MOST OPTIMUM SYSTEM STUDIED WAS THE STEAM  
ZIPPER CATAPULT. IT WAS SELECTED ON THE BASIS OF  
ITS ABILITY TO HANDLE THE FULL RANGE OF AIRCRAFT  
(75,000 TO 1,500,000 POUND GROSS WEIGHT), ITS  
HIGH SPEED CAPABILITY (RESULTING IN ABBREVIATED  
TAKE-OFF TIME AND REDUCED NOISE LEVEL DURATION),  
SHORTER LAUNCH STROKE (3882 FEET VERSUS 10,000  
FEET), EASE OF ACHIEVING BI-DIRECTIONAL CAPABILITY,  
AND ECONOMY OF OPERATION. OTHER SYSTEMS GIVEN  
DETAILED EVALUATION WERE THE JET CAR ACCELERATING  
VEHICLE AND THE STEAM-TURBINE CAPSTAN-DRIVEN  
CABLE CATAPULT. THE BASIC GOAL OF NOISE LEVEL  
REDUCTION AT TAKE-OFF IS ACCOMPLISHED TO A  
SIGNIFICANT DEGREE BY THE SELECTED LAUNCHING  
TECHNIQUE. COST OF THE LAUNCH SYSTEM DEVELOPMENT  
PROGRAM, THE AIRPORT INSTALLATION OF A SINGLE  
PROTOTYPE SYSTEM, AND THE MODIFICATION OF FIVE  
(5) AIRCRAFT (INCORPORATION OF LAUNCH  
HOOK(S) AND HIGH-SPEED LANDING GEAR) WOULD BE  
25 TO 32 MILLION DOLLARS BASED UPON END SPEEDS OF 155

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 733 590 20/1 21/5  
PRATT AND WHITNEY AIRCRAFT EAST HARTFORD CONN

FAN-COMPRESSOR NOISE: PREDICTION,  
RESEARCH, AND REDUCTION STUDIES. (U)

DESCRIPTIVE NOTE: FINAL REPT. 9 JAN 69-29 JAN 71,  
FEB 71 396P BURDSALL, E. A. URBAN, R.

H. I  
REPT. NO. PWA-4154  
CONTRACT: DOT-FA69WA-2045  
PROJ: FAA-550-001-01H  
MONITOR: FAA-RD 71-73

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COMPRESSOR NOISE, \*TURBOFAN ENGINES),  
(\*FANS, \*JET ENGINE NOISE), AIRCRAFT ENGINES,  
PREDICTIONS, REDUCTION, COMPRESSOR BLADES, BROADBAND,  
MATHEMATICAL MODELS (U)

A STUDY OF FAN AND COMPRESSOR NOISE WAS UNDERTAKEN FOR THE DEVELOPMENT OF AN ACCURATE PREDICTION SYSTEM, BASED ON THEORETICAL CONCEPTS AND/OR EMPIRICAL DATA, WHICH WOULD ENABLE THE SELECTION OF PROPER ACOUSTICAL DESIGN CHOICES FOR FUTURE ENGINES. EXPERIMENTAL PROGRAMS WERE CONDUCTED USING A VARIETY OF TEST RIGS TO PROVIDE ACOUSTIC DATA AND TO VALIDATE THEORETICAL CONCEPTS. MATHEMATICAL MODELS WERE DEVELOPED FOR EACH TYPE OF FAN NOISE, AND THEIR APPLICABILITY TO ACTUAL ENGINES WAS EVALUATED. ALTHOUGH MORE WORK IS NEEDED TO REDUCE FURTHER THE CONTRIBUTION OF FAN AND COMPRESSOR NOISE TO THE TOTAL NOISE LEVELS OF FUTURE ENGINES, THE MATERIAL PRESENTED REPRESENTS SIGNIFICANT PROGRESS IN THE UNDERSTANDING OF PARTICULAR NOISE-GENERATING MECHANISMS AND THE CAPABILITY TO PREDICT FAN NOISE. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 734 812 9/5 17/2.1  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

ACTIVE FILTERS APPLIED TO HELICOPTER NOISE  
REDUCTION.

(U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT TECHNICAL  
REPT.,

JUL 71 26P TILTON, RICHARD S. ;  
REPT. NO. ECOM-3454  
PROJ: DA-1-H-662705-A-057  
TASK: 1-H-662705-A-05705

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ELECTRIC FILTERS, DESIGN), (\*AIRPLANE  
NOISE, REDUCTION), (\*HELICOPTERS, \*RADIO COMMUNICATION  
SYSTEMS), ENGINE NOISE, RESONATORS, STABILITY,  
FREQUENCY, MICROMINIATURIZATION(ELECTRONICS) (U)  
IDENTIFIERS: AVIONICS (U)

TWO ACTIVE FILTER RESONATORS OF THE NEGATIVE FEED-  
BACK TYPE ARE EVALUATED. CLAIMED STABILITY IN  
LITERATURE AND DESIGN FORMULAS ARE VERIFIED BY AN  
ACTIVE FILTER BREADBOARD. REQUIREMENTS FOR A  
PASSIVE L-C FILTER, DEVELOPED FOR AVIONICS  
EQUIPMENT, WERE USED AS DESIGN OBJECTIVES. THE  
DESIRED RESPONSE WAS REALIZED USING TWO RESONATOR  
TYPE A HYBRID VERSION OF THE ACTIVE FILTER WAS  
DESIGNED AND FABRICATED TO ESTABLISH THAT  
MICROMINIATURIZATION WAS FEASIBLE WITHOUT ANY  
DEGRADATION IN PERFORMANCE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 737 926 6/19 20/1  
NAVY MEDICAL NEUROPSYCHIATRIC RESEARCH UNIT SAN DIEGO  
CALIF

AUTONOMIC RESPONSES TO AIRCRAFT NOISE IN  
DYSLEXIC CHILDREN,

(U)

71 9P HUNTER, EDNA J. ;  
REPT. NO. NMNRU-71-49  
PROJ: MR006.02

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN PSYCHOLOGY IN THE SCHOOLS,  
V8 N4 P362-367 OCT 71.

DESCRIPTORS: (\*READING, RESPONSE(BIOLOGY)), (\*AIRCRAFT  
NOISE, \*LEARNING), CHILDREN, PSYCHOPHYSIOLOGY,  
ATTENTION, AUTONOMIC NERVOUS SYSTEM, PSYCHOLOGY (U)

THE EFFECTS OF NOISE FROM LOW-FLYING AIRCRAFT ON  
AUTONOMIC RESPONSE PATTERNS WERE ANALYZED IN DYSLEXIC  
CHILDREN (RDS) AND A GROUP OF MATCHED CONTROLS  
(CS) DURING A TASK AND A NO-TASK SITUATION.  
NONREADERS AND CS WERE COMPARED FOR SKIN  
CONDUCTANCE LEVEL, SKIN POTENTIAL RESPONSE, HEART  
RATE LEVEL, HEART RATE RESPONSE, FINGER PULSE LEVEL,  
AND FINGER PULSE RESPONSE. THE RD CHILD APPEARED  
MORE DISTRACTED BY THE NOISE AND ELICITED  
SIGNIFICANTLY LARGER NOISE-EVOKED SKIN POTENTIAL AND  
HEART RATE RESPONSES THAN CS, BUT ONLY WHEN THE  
NOISE OCCURRED WHILE TASK-ORIENTED. DATA SUPPORT  
THE HYPOTHESIS THAT DEFECTIVE INHIBITORY MECHANISMS,  
NOT DEFECTIVE AROUSAL LEVELS, UNDERLIE THE  
ATTENTIONAL DEFICIT OF THE NONREADER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 738 511 20/1 12/1

DEUTSCHE FORSCHUNGS- UND VERSUCHSANSTALT FUER LUFT- UND  
RAUMFAHRT E V AACHEN (WEST GERMANY)

ON THE TRANSMISSION OF SOUND WAVES THROUGH A  
BLADE ROW,

(U)

MAR 71 19P KOCH, W. ;  
REPT. NO. DFVLR-SONDERDRUCK-146

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN JNL. OF SOUND AND  
VIBRATION, V18 N1 P111-128 1971. NO COPIES FURNISHED  
BY DDC OR NTIS.

DESCRIPTORS: (\*SOUND TRANSMISSION, BOUNDARY VALUE  
PROBLEMS), (\*JET ENGINE NOISE, REDUCTION), PARTIAL  
DIFFERENTIAL EQUATIONS, INTEGRAL EQUATIONS, SUBSONIC  
FLOW, BLADE AIRFOILS, NUMERICAL ANALYSIS, WEST  
GERMANY

(U)

IDENTIFIERS: \*WIENER-HOPF EQUATIONS

(U)

THE PROBLEM OF THE TRANSMISSION AND REFLECTION OF  
PLANE SOUND WAVES INCIDENT UPON A SINGLE CASCADE OF  
FINITE PLATES IS SOLVED BY MEANS OF THE FINITE  
WIENER-HOPF TECHNIQUE. THE RESULTS ARE GIVEN  
IN EXPLICIT FORM CONTAINING AN INFINITE NUMBER OF  
CONSTANTS. THESE CONSTANTS, WHICH ARE RELATED TO  
THE ATTENUATED WAVES IN THE DUCT FORMED BY TWO  
ADJACENT BLADES, HAVE TO BE DETERMINED FROM AN  
INFINITE SYSTEM OF LINEAR, ALGEBRAIC EQUATIONS. AN  
ITERATIVE SOLUTION IS POSSIBLE AND CONVERGES RAPIDLY  
IN MOST CASES. BUT EVEN WITHOUT TAKING THESE  
ATTENUATED MODES INTO ACCOUNT (EQUIVALENT TO A  
ZEROTH APPROXIMATION) GOOD AGREEMENT WITH PREVIOUS  
RESULTS IS OBTAINED. IN THEIR SIMPLEST FORM, THE  
FINAL FORMULAS REDUCE TO THE ONES GIVEN BY MANI AND  
HORVAY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 738 627 6/19 20/1  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX

BIOACOUSTIC NOISE PROBLEMS DURING OPERATION  
OF C-7A CARIBOU AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN-NOV 70,  
DEC 71 25P GASAWAY, DONALD C. ;  
REPT. NO. SAM-TR-71-12  
PROJ: AF-7755  
TASK: 775508

REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*STRESS(PHYSIOLOGY)),  
(\*AVIATION MEDICINE, AIRCRAFT NOISE), AVIATION  
PERSONNEL, HAZARDS, EXPOSURE(PHYSIOLOGY),  
THRESHOLDS(PHYSIOLOGY), HEARING

(U)

NOISE ENVIRONMENTS WITHIN THE DEHAVILLAND C-  
7A 'CARIBOU' DURING VARIOUS PHASES OF GROUND AND  
AIRBORNE OPERATION ARE ILLUSTRATED AND DESCRIBED.  
NOISE PROFILES ARE PROVIDED TO IDENTIFY AND  
DESCRIBE EXPOSURES TO NOISE ENCOUNTERED BY  
UNPROTECTED PERSONNEL AT DIFFERENT OCCUPIED LOCATIONS  
IN THE C-7A DURING TAKEOFF, CLIMB, AND CRUISE.  
FEATURES OF AEROMEDICAL SIGNIFICANCE ARE ALSO  
IDENTIFIED AND DISCUSSED. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 739 368 6/19 5/10  
MEMPHIS STATE UNIV TENN DEPT OF PSYCHOLOGY

CONVENTIONAL AND HIGH FREQUENCY HEARING OF  
NAVAL AIRCREWMEN AS A FUNCTION OF NOISE  
EXPOSURE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. MAY 71-MAR 72,  
APR 72 13P FLETCHER, JOHN L. ;  
REPT. NO. HRL/1  
CONTRACT: N00014-71-C-0354  
PROJ: NR-197-002

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HEARING, AIRCRAFT NOISE), (\*AIRCRAFT  
NOISE, FLIGHT CREWS), NOISE, EXPOSURE(PHYSIOLOGY),  
THRESHOLDS(PHYSIOLOGY), AUDIOMETRY, HAZARDS, PILOTS, JET  
AIRCRAFT (U)

CONVENTIONAL AND HIGH FREQUENCY AUDIOGRAMS FOR US  
NAVY PROP, JET, AND ROTARY WING PILOTS WERE  
OBTAINED AND PLOTTED AS A FUNCTION OF AMOUNT OF  
FLIGHT TIME LOGGED. LACK OF SUFFICIENT AUDIOGRAMS  
OF PROP AND ROTARY PILOTS RESTRICTS DISCUSSION OF  
THE RELATIVE HAZARD TO HEARING OF PROP, ROTARY,  
AND JET FLIGHT. HOWEVER, FOR JET AIRCREWMEN,  
LOSSES APPEAR TO BEGIN AT THE HIGHER FREQUENCIES  
I.E., ABOVE 6 KHZ, AND ERODE WITH CUMULATIVE FLIGHT  
TIME DOWN TO THE LOWER FREQUENCIES. PERCENT OF  
PERSONS DETECTING THE HIGH FREQUENCY SIGNALS IS A  
MORE PRECISE INDEX OF THE PROGRESSION OF HEARING LOSS  
THAN IS MEAN HEARING LEVEL, PRIMARILY BECAUSE OF AN  
ARTIFACT IN SCORING AUDIOGRAMS. DATA COLLECTION OF  
AIRCREW CANDIDATES PRE-TRAINING, DURING TRAINING, AND  
POST-PRIMARY HEARING ARE CONCURRENTLY BEING COLLECTED  
BY US NAVY AEROSPACE MEDICAL RESEARCH  
INSTITUTE (NAMI) PERSONNEL AT PENSACOLA NAS.  
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 739 870 20/1 1/3  
HYDROSPACE RESEARCH CORP SAN DIEGO CALIF SAN DIEGO  
DIV

MEASUREMENT AND ANALYSIS OF NOISE FROM FOUR  
AIRCRAFT IN LEVEL FLIGHT (727, KC-135, 707-  
320B AND DC-9).

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY-SEP 71,  
SEP 71 60P TANNER, CAROLE S. ;  
REPT. NO. HRC-TR-S-209  
CONTRACT: DOT-FA71WA-2555  
MONITOR: FAA-RD 71-83

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, MEASUREMENT), (\*AIRCRAFT  
LANDINGS, JET PLANE NOISE), COMMERCIAL PLANES, WEATHER,  
HUMIDITY, TEMPERATURE, WIND, ACOUSTIC DETECTORS, TANKER  
PLANES (U)

IDENTIFIERS: ATMOSPHERES, ATTENUATION, BOEING 727  
AIRCRAFT, BOEING 707 AIRCRAFT, KC-135 AIRCRAFT, C-135  
AIRCRAFT, DC-9 AIRCRAFT (U)

MEASUREMENTS OF NOISE FROM AIRCRAFT LEVEL FLYOVERS  
ARE PRESENTED IN THE FORM OF EFFECTIVE PERCEIVED  
NOISE LEVEL (EPNL) AS A FUNCTION OF SLANT RANGE AT  
THE CLOSEST POINT OF APPROACH. FOUR AIRCRAFT WERE  
INVESTIGATED (727, KC-135, 707-320B, AND DC-  
9) AND THE EFFORT INVOLVED ACQUISITION OF  
ACOUSTICAL, METEOROLOGICAL, AIRCRAFT TRACKING, AND  
AIRCRAFT OPERATIONAL DATA. MICROPHONES WERE  
LOCATED FOUR FEET ABOVE THE GROUND IN AN ARRAY NORMAL  
TO THE FLIGHT TRACK. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 730 987 20/1

HYDROSPACE RESEARCH CORP SAN DIEGO CALIF SAN DIEGO  
DIV

EXPERIMENTAL ATMOSPHERIC ABSORPTION  
COEFFICIENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-NOV 71,

NOV 71 76P TANNER, CAROLE S. ;

CONTRACT: DOT-FA70WA-2374

PROJ: FAA-550-002-07H

MONITOR: FAA-RD 71-99

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, ATTENUATION),  
ABSORPTION, METEOROLOGICAL PHENOMENA, POWER SPECTRA,  
TURBOJET ENGINES, EXPERIMENTAL DATA, JET TRAINING  
PLANES, OREGON

(U)

IDENTIFIERS: NOISE REDUCTION, ABSORPTION(PHYSICAL),  
SOUND, ATMOSPHERES, ATTENUATION, J-33 ENGINES, T-33A  
AIRCRAFT, T-33 AIRCRAFT

(U)

THE OBJECTIVE OF THIS WORK WAS TO ACQUIRE  
EXPERIMENTAL DATA ON ATMOSPHERIC SOUND ABSORPTION AND  
SIDELINE NOISE PROPAGATION FOR THE PURPOSE OF  
UPDATING AND REFINING AIRCRAFT NOISE MEASUREMENT  
STANDARDS AND IMPROVING AIRCRAFT NOISE PREDICTION  
TECHNIQUES. THE EFFORT INVOLVED ACQUISITION OF  
ACOUSTICAL, METEOROLOGICAL, AIRCRAFT TRACKING, AND  
AIRCRAFT OPERATIONAL DATA. THE SOUND SOURCE WAS A  
LOCKHEED T-33A AIRCRAFT, PROPELLED BY A SINGLE  
ALLISON J33-A-35 TURBOJET ENGINE, OPERATING AT  
CONSTANT THRUST IN LEVEL FLIGHT. MICROPHONES WERE  
LOCATED NEAR THE GROUND IN AN ARRAY NORMAL TO THE  
FLIGHT TRACK. ALL TESTS WERE CONDUCTED AT THE  
PENDLETON MUNICIPAL AIRPORT, PENDLETON,  
OREGON DURING TWO SEPARATE TIME PERIODS IN JULY  
AND SEPTEMBER 1970. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 740 393 20/1 13/2  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

NOISE FROM AIRCRAFT OPERATIONS AT MIRAMAR  
NAVAL AIR STATION, CALIFORNIA AND LAND  
USE INTERPRETATIONS. (U)

DEC 71 81P  
REPT. NO. BRN-2098  
CONTRACT: N62474-71-C-4781

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, NAVAL AIR STATIONS),  
(\*URBAN PLANNING, \*CALIFORNIA), AUDITORY PERCEPTION,  
NAVAL OPERATIONS, STRESS(PSYCHOLOGY), TAKEOFF, AIRCRAFT  
LANDINGS (U)  
IDENTIFIERS: \*LAND USE (U)

THE PURPOSE OF THE REPORT IS TO DEFINE THE NOISE  
ENVIRONMENT DUE TO MILITARY AIRCRAFT OPERATIONS IN  
THE VICINITY OF MIRAMAR NAVAL AIR STATION.  
THE NOISE ENVIRONMENT IS DEPICTED BY MEANS OF  
SEVERAL NOISE CONTOURS WHICH ARE INTERPRETED IN TERMS  
OF EXPECTED IMPACT ON LAND USAGE. THE MAJOR PURPOSE  
OF THE STUDY IS TO PROVIDE INTERPRETATIONS OF THE  
AIRCRAFT NOISE AS AN AID IN THE COMPATIBLE  
DEVELOPMENT OF LAND SURROUNDING MIRAMAR NAVAL  
AIR STATION. (AUTHOR) (U)



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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 740 513            21/5            20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

FAN/COMPRESSOR NOISE RESEARCH. VOLUME I.  
DETAILED DISCUSSION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-OCT 71,  
OCT 71 322P            BENZAKEIN, M. J. ; HOCHHEISER,  
R. M. ; CLAES, H. P. ; KAZIN, S. B. ; COWARD,  
W. E. ;

MONITOR: FAA-RD            71-85-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-740 514.

DESCRIPTORS: (\*AXIAL FLOW COMPRESSORS, \*JET ENGINE  
NOISE), (\*TURBOFAN ENGINES, AXIAL FLOW COMPRESSORS),  
INLET GUIDE VANES, COMPRESSOR PARTS, TURBINE PARTS,  
NOISE, VORTICES, WAKE, INTERACTIONS, WIND TUNNEL MODELS,  
SOUND PITCH, MATHEMATICAL MODELS, ACOUSTICS (U)

IDENTIFIERS: NOISE TRANSMISSION, NOISE REDUCTION,  
NOISE POLLUTION (U)

MECHANISMS OF FAN/COMPRESSOR NOISE GENERATION,  
TRANSMISSION, RADIATION AND PROPAGATION WERE  
PHYSICALLY DEFINED AND MATHEMATICALLY DESCRIBED IN  
TERMS OF FUNCTIONAL RELATIONSHIPS BETWEEN ACOUSTIC,  
GEOMETRIC AND AERODYNAMIC PARAMETERS. BASED ON  
THESE MECHANISMS, ANALYTICAL AND SEMI-EMPIRICAL  
PREDICTIONS OF PURE TONE, BROADBAND AND MULTIPLE PURE  
TONE FAN/COMPRESSOR NOISE WERE ESTABLISHED IN TERMS  
OF SOUND POWER SPECTRA, DIRECTIVITY INDICES AND THE  
RESULTANT SOUND PRESSURE SPECTRA. TEST DATA ON A  
VARIETY OF FAN AND COMPRESSOR VEHICLES WERE USED TO  
VERIFY THE BASIC PREDICTION TECHNIQUES AND TO STUDY  
THE IMPACT OF SPECIFIC DESIGN PARAMETERS UPON FAN/  
COMPRESSOR NOISE, INCLUDING VANE-BLADE SPACING, VANE  
AND BLADE NUMBERS, TIP SPEED, BLADE LOADING, ROTOR  
SWEEP, INLET GUIDE VANES AND VANE LEAN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 740 514 21/5 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

FAN/COMPRESSOR NOISE RESEARCH. VOLUME  
II. DETAILED DISCUSSION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-OCT 71,  
OCT 71 352P BENZAKEN, M. J. ;HOCHHEISER,  
R. M. ;CLAES, H. P. ;KAZIN, S. B. ;COWARD,  
W. E. ;  
CONTRACT: DOT-FA68WA-1960  
MONITOR: FAA-RD 71-85-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-740 513, AND  
VOLUME 3, AD-740 515.

DESCRIPTORS: (\*AXIAL FLOW COMPRESSORS, \*JET ENGINE  
NOISE), (\*TURBOFAN ENGINES, AXIAL FLOW COMPRESSORS),  
INLET GUIDE VANES, COMPRESSOR PARTS, TURBINE PARTS,  
NOISE, VORTICES, WAKE, INTERACTIONS, CAPTIVE TESTS,  
SOUND PITCH, ACOUSTICS

(U)

IDENTIFIERS: NOISE TRANSMISSION, NOISE REDUCTION,  
NOISE POLLUTION

(U)

TEST DATA ON A VARIETY OF FAN AND COMPRESSOR  
VEHICLES WERE USED TO VERIFY THE BASIC PREDICTION  
TECHNIQUES AND TO STUDY THE IMPACT OF SPECIFIC DESIGN  
PARAMETERS UPON FAN/COMPRESSOR NOISE, INCLUDING VANE-  
BLADE SPACING, VANE AND BLADE NUMBERS, TIP SPEED,  
BLADE LOADING, ROTOR SWEEP, INLET GUIDE VANES AND  
VANE LEAN. EFFECTS OF REFRACTION ON TONE  
DIRECTIVITIES WERE MEASURED AND COMPARED WITH  
EXPECTATIONS. PROPAGATION OF ACOUSTIC WAVES WERE  
STUDIED, WITH SPECIFIC EXPERIMENTS CONDUCTED TO  
INVESTIGATE GROUND REFLECTION PHASE FACTOR AND  
ATMOSPHERIC ABSORPTION AT HIGH FREQUENCIES. THE  
PREDICTION SYSTEMS WERE SUMMARIZED IN TERMS OF FLOW  
CHARTS AND TABLES. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 740 515 21/5 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

FAN/COMPRESSOR NOISE RESEARCH. VOLUME  
III. COMPILATION OF TEST DATA. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-OCT 71,  
OCT 71 277P BENZAKEN, M. J. HOCHHEISER,  
R. M. CLAES, H. P. KAZIN, S. R. COWARD,  
W. E. ;  
CONTRACT: DOT-FA68WA-1960  
MONITOR: FAA-RD 71-85-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-740 514, AND  
VOLUME 4, AD-740 516.

DESCRIPTORS: (\*AXIAL FLOW COMPRESSORS, \*JET ENGINE  
NOISE), (\*TURBOFAN ENGINES, AXIAL FLOW COMPRESSORS),  
INLET GUIDE VANES, COMPRESSOR PARTS, TURBINE PARTS,  
NOISE, VORTICES, WAKE, INTERACTIONS, SOUND PITCH,  
ACOUSTICS, DATA PROCESSING (U)  
IDENTIFIERS: NOISE REDUCTION, NOISE POLLUTION, NOISE  
TRANSMISSION (U)

APPENDICES A-C CONTAIN THE PROCESSED DATA FROM  
EACH TEST VEHICLE CONFIGURATION, IN THE FORM OF THE  
COMPUTER PRINT-OUT SHEET. THE ACOUSTIC DATA  
PRESENTED ON THESE SHEETS CONSISTS OF 1/3 OCTAVE  
SOUND PRESSURE LEVEL AT EACH ANGLE AND 1/3 OCTAVE  
SOUND POWER LEVEL FOR FREQUENCIES OF 50 TO 10K  
HZ, OVERALL SOUND PRESSURE LEVEL AND PERCEIVED  
NOISE LEVEL AT EACH ANGLE, OVERALL SOUND POWER LEVEL,  
AND THE DIRECTIVITY INDEX. A DETAILED EXPLANATION  
OF THE TERMINOLOGY IS PRESENTED IN THE FOLLOWING  
PAGES. ALL DATA HAS BEEN CORRECTED FOR STANDARD  
DAY ATMOSPHERIC ABSORPTION CONDITIONS. THE DATA FOR  
D/V I (APPENDIX A) IS AT A 250 FOOT RADIUS  
ONLY; THE DATA FOR D/V II AND D/V III  
(APPENDICES B-C) IS AT BOTH A 250 FOOT AND A  
150 FOOT RADIUS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 740 516 21/5 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

FAN/COMPRESSOR NOISE RESEARCH. VOLUME  
IV. COMPILATION OF TEST DATA.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-OCT 71,  
OCT 71 264P BENZAKEIN, M. J. ;HOCHHEISER,  
R. M. ;CLAES, H. P. ;KAZIN, S. B. ;COWARD,  
W. E. ;  
CONTRACT: DOT-FA68WA-1960  
MONITOR: FAA-RD 71-85-VOL-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-740 515.

DESCRIPTORS: (\*AXIAL FLOW COMPRESSORS, \*JET ENGINE  
NOISE), (\*TURBOFAN ENGINES, AXIAL FLOW COMPRESSORS),  
INLET GUIDE VANES, COMPRESSOR PARTS, TURBINE PARTS,  
NOISE, VORTICES, WAKE, INTERACTIONS, SOUND PITCH,  
ACOUSTICS, DATA PROCESSING

(U)

IDENTIFIERS: NOISE TRANSMISSION, NOISE POLLUTION,  
NOISE REDUCTION

(U)

APPENDICES D-E CONTAIN THE PROCESSED DATA FROM  
EACH TEST VEHICLE CONFIGURATION, IN THE FORM OF THE  
COMPUTER PRINT-OUT SHEET. THE ACOUSTIC DATA  
PRESENTED ON THESE SHEETS, CONSISTS OF 1/3 OCTAVE  
SOUND PRESSURE LEVEL AT EACH ANGLE AND 1/3 OCTAVE  
SOUND POWER LEVEL FOR FREQUENCIES OF 50 TO 10K HZ,  
OVERALL SOUND PRESSURE LEVEL AND PERCEIVED NOISE  
LEVEL AT EACH ANGLE, OVERALL SOUND POWER LEVEL, AND  
THE DIRECTIVITY INDEX. A DETAILED EXPLANATION OF  
THE TERMINOLOGY IS PRESENTED IN THE FOLLOWING PAGES.  
ALL DATA HAS BEEN CORRECTED FOR STANDARD DAY  
ATMOSPHERIC ABSORPTION CONDITIONS. THE DATA FOR  
D/V III (APPENDICES D-E) IS AT BOTH A 250  
FOOT AND A 150 FOOT RADIUS. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 740 563 20/1 1/2  
HYDROSPACE RESEARCH CORP SAN DIEGO CALIF SAN DIEGO  
DIV

MEASUREMENT AND ANALYSIS OF NOISE FROM FOUR  
AIRCRAFT DURING APPROACH AND DEPARTURE  
OPERATIONS (727, KC-135, 707-320B, AND DC-  
9).

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAR-SEP 71,  
SEP 71 185P TANNER, CAROLE S. ;  
REPT. NO. HRC-TR-S-208  
CONTRACT: DOT-FA71WA-2555  
PROJ: FAA-550-002-03H  
MONITOR: FAA-RD 71-84

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*APPROACH), (\*TAKEOFF,  
JET PLANE NOISE), JET TRANSPORT PLANES, COMMERCIAL  
PLANES, MEASUREMENT, STATISTICAL ANALYSIS (U)  
IDENTIFIERS: BOEING 727 AIRCRAFT, BOEING 707 AIRCRAFT,  
KC-135 AIRCRAFT, C-135 AIRCRAFT, DC-9 AIRCRAFT (U)

THE OBJECTIVE OF THIS WORK WAS TO MEASURE,  
EVALUATE, AND IDENTIFY THE NOISE LEVELS ALONG THE  
FLIGHT TRACK GENERATED BY 727, KC-135, 707-320B,  
AND DC-9 AIRCRAFT. THE AIRCRAFT WERE DIRECTED TO  
OPERATE IN A WIDE VARIETY OF TAKEOFF AND APPROACH  
PROCEDURES. THE EFFORT INVOLVED ACQUISITION OF  
ACOUSTICAL, METEOROLOGICAL, AIRCRAFT TRACKING, AND  
AIRCRAFT OPERATIONAL DATA. MICROPHONES WERE  
LOCATED FOUR FEET ABOVE THE GROUND IN AN ARRAY  
PARALLEL TO THE FLIGHT TRACK ALONG THE EXTENDED  
RUNWAY CENTERLINE UP TO 10 NAUTICAL MILES FROM THE  
RUNWAY THRESHOLD. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 740 642 20/1 1/2  
BOLT BERANFK AND NEWMAN INC CANOGA PARK CALIF

NOISE MEASUREMENTS DURING APPROACH  
OPERATIONS ON RUNWAY 21R AT DETROIT  
METROPOLITAN AIRPORT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY-DEC 71,  
DEC 71 90P BISHOP, DWIGHT E. ;  
REPT. NO. BRN-2203  
CONTRACT: DOT-FA71WA-2589  
PROJ: FAA-202-812-038  
MONITOR: FAA-RD 71-117

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRPORTS, \*JET PLANE NOISE), (\*AIRCRAFT  
LANDINGS, JET PLANE NOISE), RUNWAYS, AUDITORY  
PERCEPTION, TABLES(DATA), MICHIGAN

(U)

IDENTIFIERS: ACOUSTIC MEASUREMENT,  
DETROIT(MICHIGAN)

(U)

AIRCRAFT NOISE AND DISTANCE DATA WERE ACQUIRED AT  
THREE LOCATIONS UNDER THE INSTRUMENT LANDING SYSTEM  
LOCALIZER PATH TO RUNWAY 21R AT DETROIT  
METROPOLITAN AIRPORT PRECEDING AND DURING A THREE  
PHASE 'FIELD EVALUATION OF 3,000 FT. GLIDE SLOPE  
INTERCEPT PROGRAM' CONDUCTED BY THE FAA. DURING  
TWO TEN-DAY PERIODS OF MEASUREMENTS, NOISE OF ALL  
IFR APPROACHES ON RUNWAY 21R BETWEEN THE HOURS OF  
0600 AND 2400 WERE RECORDED. EFFECTIVE PERCEIVED  
NOISE LEVELS (EPNL) AND OTHER NOISE MEASURES WERE  
OBTAINED FOR MUCH OF THE RECORDED DATA; NFF VALUES  
WERE THEN CALCULATED FROM THE EPNL DATA.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 741 149 20/1 5/10  
HYDROSPACE RESEARCH CORP SAN DIEGO CALIF

ANALYSIS OF OPERATIONAL NOISE MEASUREMENTS IN  
TERMS OF SELECTED HUMAN RESPONSE NOISE  
EVALUATION MEASURES. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAR-DEC 71,  
DEC 71 68P TANNER, CAROLE S. ; GLASS,  
RAY E. ;  
REPT. NO. HRC-TR-S-211  
CONTRACT: DOT-FA71WA-2555  
MONITOR: FAA-RD 71-112

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*AUDITORY PERCEPTION),  
MEASUREMENT, JET TRANSPORT PLANES, TAKEOFF, APPROACH,  
JET PLANE NOISE (U)  
IDENTIFIERS: BOEING 707 AIRCRAFT, BOEING 727 AIRCRAFT,  
KC-135 AIRCRAFT, C-135 AIRCRAFT, DC-9 AIRCRAFT (U)

A COMPARISON BETWEEN COMMON AIRCRAFT NOISE MEASURES  
SUCH AS COMPOSITE PERCEIVED NOISE LEVEL (PNLC),  
MAXIMUM PERCEIVED NOISE LEVEL (PNLM), A-WEIGHTED  
LEVEL, D-WEIGHTED LEVEL AND NOISE EXPOSURE LEVEL  
(NEL), AND THE CORRESPONDING EFFECTIVE PERCEIVED  
NOISE LEVEL (EPNL) WAS MADE. DIFFERENCES BETWEEN  
EPNL AND EACH OF THESE MEASURES WERE COMPUTED FOR  
THE 727, KC-135, 707-320B, AND DC-9 AIRCRAFT  
FOR THREE TAKE-OFF AND FOUR APPROACH OPERATIONAL  
PROCEDURES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 741 248 20/1  
HYDROSPACE RESEARCH CORP SAN DIEGO CALIF SAN DIEGO  
DIV

MEASUREMENT AND ANALYSIS OF NOISE FROM  
SEVENTEEN AIRCRAFT IN LEVEL FLIGHT  
(MILITARY, BUSINESS JET, AND GENERAL  
AVIATION).

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-NOV 71,  
NOV 71 67P TANNER, CAROLE S. ;  
REPT. NO. HRC-TR-S-212  
CONTRACT: DOT-FA70WA-2374  
PROJ: FAA-55D-002-074  
MONITOR: FAA-RD 71-98

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, MEASUREMENT), JET PLANE  
NOISE, AUDITORY PERCEPTION, STATISTICAL ANALYSIS,  
METEOROLOGICAL PHENOMENA (U)  
IDENTIFIERS: GENERAL AVIATION AIRCRAFT (U)

MEASUREMENTS OF NOISE FROM AIRCRAFT LEVEL FLYOVERS  
ARE PRESENTED IN THE FORM OF EFFECTIVE PERCEIVED  
NOISE LEVEL (EPNL) AS A FUNCTION OF SLANT RANGE AT  
THE CLOSEST POINT OF APPROACH. SEVENTEEN AIRCRAFT  
WERE INVESTIGATED (VARIOUS MILITARY, BUSINESS JETS,  
AND GENERAL AVIATION TYPES) AND THE EFFORT INVOLVED  
ACQUISITION OF ACOUSTICAL, METEOROLOGICAL, AIRCRAFT  
TRACKING, AND AIRCRAFT OPERATIONAL DATA.  
MICROPHONES WERE LOCATED NEAR THE GROUND IN AN  
ARRAY NORMAL TO THE FLIGHT TRACK. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 743 095 20/1 1/5  
IIT RESEARCH INST CHICAGO ILL

STUDY OF NOISE IN AIR ROUTE TRAFFIC  
CONTROL CENTER, FLIGHT SERVICE STATION,  
AIR TRAFFIC CONTROL TOWER AND REMOTE  
FACILITIES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON PHASE I, 18 MAY-18  
NOV 71,  
DEC 71 56P SEMMELINK, A. ; CLINCH, J. M.

CONTRACT: DOT-FA71W-2587  
MONITOR: FAA-RD 72-47

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TERMINAL FLIGHT FACILITIES, \*AIRCRAFT  
NOISE), PSYCHOACOUSTICS, CONTROL, AIR TRAFFIC  
CONTROLLERS, PSYCHOLOGY, PERFORMANCE(HUMAN),  
STANDARDS

(U)

IDENTIFIERS: \*NOISE POLLUTION, \*NOISE REDUCTION

(U)

THE REPORT DESCRIBES THE DEVELOPMENT OF A NOISE  
STANDARD FOR PERMISSIBLE NOISE LEVELS IN FAA AIR  
TRAFFIC CONTROL AND NAVIGATIONAL FACILITIES.  
THE CONTENTS OF THE REPORT INCLUDE NOISE  
DEFINITIONS, THEORY OF SOUND, SOUND MEASURING  
INSTRUMENTATION, NOISE SURVEYS, REFERENCE  
PUBLICATIONS, AND NOISE CRITERIA. CRITERIA ARE  
GIVEN FOR NOISE ENVIRONMENTS WHICH PERMIT SAFE AND  
SATISFACTORY PERFORMANCE OF TASKS IN THE FOLLOWING  
FACILITIES: TRAFFIC CONTROL CENTERS, INCLUDING  
IMPORTANT COMMUNICATION AREAS; AIR TRAFFIC CONTROL  
TOWER CABS; FLIGHT SERVICE STATIONS AND REMOTE  
FACILITIES. CRITERIA FOR EACH OF THESE FACILITIES  
ARE DESCRIBED AND JUSTIFICATIONS FOR THE SELECTION OF  
NOISE CRITERIA ARE GIVEN. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 744 590 20/1  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

FREQUENCY DEPENDENCE OF SOUND TRANSMITTED  
FROM AN AIRBORNE SOURCE INTO THE OCEAN, (U)

MAY 72 53P MEDWIN, HERMAN ; HELBIG, R.  
A. ;  
REPT. NO. NPS-61MD72051A

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRPLANE ENGINE NOISE, \*UNDERWATER  
SOUND), HELICOPTERS, AIRCRAFT NOISE, SOUND TRANSMISSION,  
OCEAN WAVES, HYDROPHONES, SURFACE ROUGHNESS (U)  
IDENTIFIERS: SH-3 AIRCRAFT, HELMHOLTZ EQUATION (U)

THE PREDICTED DEPENDENCE OF SOUND TRANSMISSION ON  
THE STATISTICS OF THE RANDOMLY-ROUGH INTERFACE  
BETWEEN DISSIMILAR FLUIDS HAS BEEN STUDIED BY USE OF  
THE HELMHOLTZ INTEGRAL. THE PREDICTIONS HAVE  
BEEN VERIFIED FOR RADIATION FROM A HELICOPTER  
HOVERING, AND SLOWLY MOVING, OVER THE SEA, FOR  
FREQUENCIES TO 1000 HZ FOR A WIDE RANGE OF SLOWLY  
MOVING, OVER THE SEA, FOR FREQUENCIES TO 1000 HZ  
FOR A WIDE RANGE OF SURFACE ACOUSTICAL ROUGHNESSES.  
THE ROUGHNESS PARAMETERS ARE THE RMS HEIGHT OF THE  
SURFACE, PROPAGATION CONSTANT, SPEED OF PROPAGATION  
AND ANGLE WITH THE NORMAL, RESPECTIVELY. THE  
TRANSMISSION CHANGE OF SOUND PRESSURE AS A FUNCTION  
OF FREQUENCY IS PRESENTED FOR SEVERAL CONDITIONS OF  
AN SH3-D HELICOPTER HOVERING AND FLYING OVER OR  
NEAR AN ARRAY OF MICROPHONE AND SONOBUOY HYDROPHONES.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 744 828 20/1 6/19  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

NOISE AND SPEECH LEVELS ASSOCIATED WITH THE  
F-111A PREP AREA, MCCLELLAN AFB.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY-NOV 70,  
MAY 72 38P SOMMER, HENRY C. ROSE,  
JUSTUS F. , JR;  
REPT. NO. AMRL-TR-72-2  
PROJ: AF-7231  
TASK: 723103, 723104

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, \*AUDITORY PERCEPTION),  
(\*SPEECH, JET PLANE NOISE), EXPOSURE(PHYSIOLOGY), JET  
FIGHTERS, EAR PROTECTORS (U)  
IDENTIFIERS: F-111 AIRCRAFT, F-111A AIRCRAFT (U)

THE PURPOSE OF THE STUDY WAS TO MEASURE THE AMBIENT  
NOISE ENVIRONMENT AND SPEECH RECEPTION LEVELS  
ASSOCIATED WITH THE F-111A FLIGHT PREP AREA AT  
MCCLELLAN AFB, CALIFORNIA; TO MEASURE NOISE  
ATTENUATION CHARACTERISTICS OF SEVERAL EAR PROTECTION  
DEVICES CONTEMPLATED FOR USE IN THE AMBIENT NOISE;  
AND TO DETERMINE MAXIMUM PERMISSIBLE HUMAN EXPOSURE  
DURATIONS BASED ON THESE DATA. THE RESULTS SHOW  
THAT A H-133 (STANDARD AF COMMUNICATION  
HEADSET, MICROPHONE) IN COMBINATION WITH A CUSTOM  
MOLDED INSERT COMMUNICATION EARPLUG WOULD PERMIT  
PERSONNEL TO BE EXPOSED UP TO 8 HOURS CONTINUOUSLY AT  
THE 70% AND 85% ENGINE POWER SETTINGS. THESE  
TIME LIMITS DECREASE TO 36 MINUTES PER 8 HOUR DAY  
DURING AFTERBURNER ZONE 5. EVEN IN THE HIGHEST  
NOISE LEVELS, COMMUNICATION CAPABILITY WAS  
SATISFACTORY WITH THIS EARPLUG/HEADSET COMBINATION.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 747 129 6/19 20/1  
ENVIRONMENTAL ACOUSTICS CHATSWORTH CALIF

EVALUATION OF HEARING LEVELS OF RESIDENTS  
LIVING NEAR A MAJOR AIRPORT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 72 99P PARNELL, J. E. INAGFL, D.  
C. COHEN, A. ;  
CONTRACT: DOT-FA70-WAI-200, PHS-71-0108  
MONITOR: FAA-RD 72-72

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*AIRPORTS), (\*HEARING,  
AIRCRAFT NOISE), THRESHOLDS(PHYSIOLOGY),  
EXPOSURE(PHYSIOLOGY), URBAN AREAS, ANALYSIS OF VARIANCE,  
AUDITORY ACUITY (U)  
IDENTIFIERS: LOS ANGELES INTERNATIONAL AIRPORT, \*NOISE  
POLLUTION (U)

AUDIOGRAMS AND OTHER DATA RELATED TO EAR CONDITIONS  
AND NOISE EXPOSURE WERE OBTAINED FROM RESIDENTS DRAWN  
FROM TWO NEIGHBORHOODS IN THE GREATER LOS ANGELES  
AREA. ONE COMMUNITY BORDERED LOS ANGELES  
INTERNATIONAL AIRPORT AND HAD BEEN SUBJECTED OVER  
THE YEARS TO FREQUENT TAKEOFF NOISE OF HIGH LEVEL.  
MAXIMUM RMS MEASUREMENTS OF THESE AIRCRAFT SOUNDS  
OUTDOORS IN THIS NEIGHBORHOOD RANGED FROM 76 TO 101  
DBA WITH A MEDIAN OF 88 DBA. THE SECOND  
COMMUNITY WAS SIMILAR TO THE AIRPORT ONE IN  
DEMOGRAPHY BUT FREE OF SIGNIFICANT AIRCRAFT NOISE  
INTRUSION. NOISE LEVELS HERE RARELY EXCEEDED 60  
DBA AND COMMONLY WERE 50 DBA OR LESS. BOTH  
GROUPS DISPLAYED AVERAGE HEARING LEVELS AS GOOD AND  
AT CERTAIN FREQUENCIES SLIGHTLY BETTER THAN ESTIMATES  
OBTAINED FROM THE NATIONAL HEALTH SURVEY OF  
1960-1962. THE OVERALL FINDINGS DID NOT MAKE IT  
POSSIBLE TO DRAW FIRM CONCLUSIONS ABOUT COMMUNITY  
AIRCRAFT NOISE EXPOSURE AS A CAUSE OF THE APPARENT  
DIFFERENCES IN HEARING LEVELS BETWEEN THE TWO GROUPS.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 747 774 20/1 1/3  
GENERAL ELECTRIC CO CINCINNATI OHIO

SUPERSONIC JET EXHAUST NOISE. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 71-MAY 72,  
AUG 72 794P BENZAKIN, MEYER J. KNOTT,  
PAUL R. I

CONTRACT: F33615-71-C-1662

PROJ: AF-3066

TASK: 306614

MONITOR: AFAPL TR-72-52

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE),  
ACOUSTICS, CONICAL NOZZLES, FLOW FIELDS, JET FLAMES,  
TURBULENCE, ACOUSTIC IMPEDANCE, MATHEMATICAL ANALYSIS (U)  
IDENTIFIERS: NOISE POLLUTION, \*NOISE REDUCTION,  
PLUMES (U)

THE REPORT SUMMARIZES THE RESULTS OBTAINED AT  
GENERAL ELECTRIC DURING THE FIRST PHASE OF THE  
AIR FORCE SUPERSONIC EXHAUST NOISE -  
VELOCITY MODEL PROGRAM. THE OVERALL OBJECTIVE  
OF THE PROGRAM IS TO DEVELOP THE TECHNOLOGY TO  
SIGNIFICANTLY REDUCE SUPERSONIC AIRCRAFT PROPULSION  
SYSTEM NOISE WITH MINIMUM ASSOCIATED PERFORMANCE AND  
WEIGHT PENALTIES. TO FULFILL THAT OBJECTIVE,  
RESEARCH IS BEING CARRIED OUT TO DEVELOP THE  
EXPERIMENTAL TECHNIQUES AND THE NECESSARY THEORY TO  
REVEAL THE BASIC MECHANISMS OF JET GENERATED NOISE  
THROUGH THE RANGE OF VELOCITIES AND TEMPERATURES  
TYPICAL OF PRESENT AND FUTURE MILITARY AND COMMERCIAL  
SUPERSONIC AIRCRAFT PROPULSION SYSTEMS. A  
COMPREHENSIVE AERODYNAMIC ANALYTICAL MODEL DESCRIBING  
THE FLOW MECHANISMS IN SUPERSONIC JETS IS PRESENTED  
AND COMPARED WITH EXPERIMENTAL DATA. A LARGE  
NUMBER OF THEORETICAL MODELS DESCRIBING SUPERSONIC  
FAR FIELD JET NOISE ARE EVALUATED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 748 039 20/1 21/5 1/3  
WYLE LABS FL SFGUNDO CALIF

FAR FIELD NOISE GENERATION BY COAXIAL  
FLOW JET EXHAUSTS. VOLUME II.  
COMPILATION OF TEST RESULTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 68-NOV 71,  
NOV 71 329P ELDRED, KENNETH M. ;  
CONTRACT: DOT-FA68WA-1889  
PROJ: FAA-550-001-05H  
MONITOR: FAA-RD 71-101-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED NOV 71, AD-  
743 707.

DESCRIPTORS: (\*EXHAUST GASES, \*JET ENGINE NOISE),  
(\*TURBOJET ENGINES, NOZZLE GAS FLOW), JET MIXING FLOW,  
SECONDARY FLOW, NOZZLE AREA RATIO, TEMPERATURE,  
PRESSURE, VELOCITY, STATISTICAL DATA,  
THRESHOLDS(PSHYSIOLOGY)

(U)

IDENTIFIERS: COAXIAL JETS

(U)

THE REPORT IS VOLUME 2 OF A TWO-VOLUME REPORT ON AN  
EMPIRICALLY-DERIVED NOISE PREDICTION METHOD FOR  
COAXIAL JETS. VOLUME 1 CONTAINS A DESCRIPTION OF  
THE EXPERIMENTAL PROGRAM, THE RESULTING METHOD FOR  
PREDICTING THE NOISE OF FULL-SCALE COAXIAL FLOW JETS  
IN TERMS OF MAXIMUM SIDELINE PERCEIVED NOISE LEVEL  
(PNL), AND A DESIGN GUIDE FOR NOISE MINIMIZATION AT  
CONSTANT THRUST. THE VOLUME CONTAINS A LISTING OF  
THE EXPERIMENTAL RUNS THAT WERE MADE IN THE COURSE OF  
THIS PROJECT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 748 876 1/3 20/1  
ARMY RESEARCH OFFICE DURHAM N C

HELICOPTER NOISE SYMPOSIUM, HELD AT  
DURHAM'S HOTEL AND MOTEL, DURHAM, NORTH  
CAROLINA, ON SEPTEMBER 28-30 1971.

(U)

SEP 71 164P  
MONITOR: AROD 9164:1-E

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELICOPTERS, \*NOISE), AERODYNAMIC NOISE,  
JET PLANE NOISE, JET ENGINE NOISE, ROTOR BLADES (ROTARY  
WINGS), VORTICES, ACOUSTIC PROPERTIES, ACOUSTICS,  
SYMPOSIA (U)  
IDENTIFIERS: \*VORTEX SHEDDING (U)

A SYMPOSIUM IN WHICH RECOGNIZED EXPERTS IN THE  
HELICOPTER NOISE FIELD PARTICIPATED WAS ORGANIZED.  
PRIMARY RESEARCHERS FROM TEN ARO-D-SPONSORED  
CONTRACTS AND FIVE OTHER GROUPS PRESENTED PAPERS ON  
THE SUBJECT OF HELICOPTER NOISE. IN ADDITION,  
HELICOPTER NOISE RESEARCH AT TWO U. S. ARMY  
AIR MOBILITY R AND D LABORATORIES  
(AAMRDL), AT NASA LANGLEY RESEARCH CENTER,  
AND AT THE OFFICE OF THE CHIEF OF RESEARCH AND  
DEVELOPMENT (OCRD) WAS DISCUSSED. THE REPORT  
INCLUDES ALL FORMAL PAPERS PRESENTED AT THE  
HELICOPTER NOISE SYMPOSIUM HELD IN DURHAM,  
NORTH CAROLINA, ON SEPTEMBER 29-30, 1971.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 749 137 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME II. FUTURE STUDIES FOR  
DEFINITION OF SUPERSONIC JET NOISE  
GENERATION AND REDUCTION MECHANISMS.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72,

JUL 72 46P PLUMBLEE, HARRY E. ; BURRIN,  
ROBERT H. ;

CONTRACT: F33615-71-C-1663

PROJ: AF-3066

TASK: 306614

MONITOR: AFAPL

TR-72-53-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-749 138, AND  
VOLUME 1, AD-749 428.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS,  
AERODYNAMIC NOISE, SOUND TRANSMISSION, GAS TURBINE  
NOZZLES, AFTERBURNING, JET MIXING FLOW, COMBUSTION,  
LASERS, INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC FIELDS, ACOUSTIC MEASUREMENT, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

THE REPORT CONTAINS A DETAILED LIST OF PROPOSED  
RECOMMENDATIONS FOR WORK NECESSARY TO ATTAIN THE GOAL  
OF DEVELOPING TECHNOLOGY FOR SIGNIFICANTLY REDUCING  
SUPERSONIC AIRCRAFT PROPULSION SYSTEM NOISE. THE  
RECOMMENDATIONS AND PROPOSED WORK TASK ARE BASED ON  
THE RESEARCH FINDINGS REPORTED IN VOLUME 1 AND  
VOLUMES 3-6 OF THIS REPORT. RECOMMENDATIONS FOR  
EXPERIMENTAL AND THEORETICAL STUDIES OF TURBULENT-  
MIXING JET NOISE, SHOCK-ASSOCIATED NOISE AND UPSTREAM  
NOISE ARE DETAILED IN THE TECHNICAL PLAN. ALSO  
RECOMMENDATIONS FOR IMPROVEMENTS IN INSTRUMENTATION  
AND NOISE SUPPRESSION STUDIES ARE LISTED.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 749 138 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME III. PROGRESS TOWARD A  
UNIFIED THEORY OF JET ENGINE NOISE.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72,

JUL 72 151P DOAK, PHILIP E. I  
CONTRACT: F33615-71-C-1663  
PROJ: AF-3066  
TASK: 306614  
MONITOR: AFAPL TR-72-53-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 4, AD-749 139, AND  
VOLUME 2, AD-749 137.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS,  
AERODYNAMIC NOISE, SOUND TRANSMISSION, GAS TURBINE  
NOZZLES, AFTERBURNING, JET MIXING FLOW, COMBUSTION,  
LASERS, INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC MEASUREMENT, ACOUSTIC FIELDS, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

EXISTING THEORIES OF AERODYNAMIC NOISE GENERATION  
ARE CRITICALLY REVIEWED WITH SPECIAL EMPHASIS ON  
CONCEPTUAL ADEQUACY AND PHYSICAL SCOPE WITH SPECIAL  
REFERENCE TO SUPERSONIC JET NOISE. IN THIS REVIEW  
THE BASIC WORK OF STOKES, KIRCHOFF AND RAYLEIGH  
ON FLUCTUATING MOTIONS IN FLUIDS IS RECALLED AND  
DEVELOPED TO PROVIDE A FIRM BASIS FOR THE CRITIQUE.  
THE ADVANTAGES AND DISADVANTAGES OF ACOUSTIC  
ANALOGY THEORIES SUCH AS LIDTHILL'S ARE THOROUGHLY  
DISCUSSED IN SECTION 11.3. A CONTRIBUTION IS  
MADE TOWARDS REMOVING THE CRITICISMS MADE BY  
LIDTHILL OF RIBNER'S 'ISOTROPIC SOURCE TENSOR'  
THEORY. NEW DEVELOPMENTS SUCH AS THOSE BY CROW,  
LILLEY AND DOAK ARE EMPHASIZED. ON THE BASIS OF  
THE EVIDENCE PROVIDED BY THE CRITICAL REVIEW, A NEW  
UNIFIED THEORY FOR JET NOISE HAS BEEN DEVISED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 749 139 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME IV. THEORY OF  
TURBULENCE GENERATED JET NOISE, NOISE  
RADIATION FROM UPSTREAM SOURCES, AND  
COMBUSTION NOISE.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72.

JUL 72 189P LILLEY, GEOFFREY M. ;  
PLUMBLEE, HARRY E. ; STRAHLE, WARREN C. ; RUO,  
SONG-YEONG ; DOAK, PHILIP E. ;  
CONTRACT: F33615-71-C-1663  
PROJ: AF-3066  
TASK: 306614  
MONITOR: AFAPL TR-72-53-VOL-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 5, AD-749 140, AND  
VOLUME 3, AD-749 138.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS,  
AERODYNAMIC NOISE, SOUND TRANSMISSION, GAS TURBINE  
NOZZLES, AFTERBURNING, JET MIXING FLOW, COMBUSTION,  
LASERS, INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC MEASUREMENT, ACOUSTIC FIELDS, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

THE REPORT PRESENTS A SERIES OF SPECIFIC  
THEORETICAL STUDIES DIRECTED TOWARD THE SOLUTION OF  
JET NOISE GENERATION AND RADIATION, UPSTREAM NOISE  
RADIATION AND COMBUSTION NOISE GENERATION. THREE  
THEORIES ARE PRESENTED. LILLEY'S WORK IS A NEW  
THEORY OF JET NOISE GENERATION, BASED ON  
IDENTIFICATION OF ACOUSTIC AND SOURCE GENERATION  
TERMS. THE ACOUSTIC 'CONVERTED WAVE EQUATION'  
DERIVED INCLUDES THE PRIDMORE-BROWN/MUNGUR  
SHEAR REFRACTION TERM. PLUMBLEE PRESENTS A  
THEORETICAL ANALYSIS AND NUMERICAL SOLUTION  
TECHNIQUES FOR SOLVING FOR THE RADIATION FIELD FROM A  
SOURCE WITHIN A JET FLOW AND SPECIFICALLY DEALS WITH  
RADIATION FROM AN ACOUSTIC DISTRIBUTION INITIALLY  
SPECIFIED AT THE END OF A CIRCULAR EXHAUST DUCT  
TERMINATION THROUGH THE JET FLOW TO THE SURROUNDING  
MEDIUM.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 749 140 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME V. AN EXPERIMENTAL  
INVESTIGATION OF JET NOISE VARIATION WITH  
VELOCITY AND TEMPERATURE.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72,

JUL 72 172P LUSH, PETER A. BURRIN,

ROBERT H. ;

CONTRACT: F33615-71-C-1663

PROJ: AF-3066

TASK: 306614

MONITOR: AFAPL TR-72-53-VOL-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 6, AD-749 141, AND  
VOLUME 4, AD-749 139.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS,  
AERODYNAMIC NOISE, SOUND TRANSMISSION, GAS TURBINE  
NOZZLES, AFTERBURNING, JET MIXING FLOW, COMBUSTION,  
LASERS, INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC FIELDS, ACOUSTIC MEASUREMENT, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

A SERIES OF EXPERIMENTS WAS CONDUCTED FOR THE  
PURPOSE OF CLEARLY ISOLATING AND QUANTIFYING THE  
NOISE SOURCES ASSOCIATED WITH SUPERSONIC JET NOISE  
AND FOR ESTABLISHING THE EFFECT OF REFRACTION ON THE  
RADIATED FIELD OF THESE SOURCES, AS WELL AS THE  
RADIATION FIELD CHARACTERISTICS OF THESE SOURCES.  
RESULTS FROM THE TURBULENT-MIXING TESTS AND THE  
SHOCK-ASSOCIATED TESTS ARE APPENDED TO THIS REPORT IN  
SEPARATE VOLUMES. THE TURBULENCE NOISE 1/3 OCTAVE  
CORRECTED DATA APPEAR IN APPENDIX I AND THE  
SHOCK-ASSOCIATED NARROW-BAND SPECTRA APPEAR IN  
APPENDIX 2. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 749 141 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME V - APPENDIX I.  
TURBULENCE MIXING REGION NOISE DATA.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72,

JUL 72 575P BURRIN, ROBERT H. ; LUSH,  
PETER A. ; WYNNE, GEORGE A. ;  
CONTRACT: F33615-71-C-1663  
PROJ: AF-3066  
TASK: 306614  
MONITOR: AFAPL TR-72-53-VOL-5-APP-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 7, AD-749 142, AND  
VOLUME 5, AD-749 140.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS,  
AERODYNAMIC NOISE, SOUND TRANSMISSION, GAS TURBINE  
NOZZLES, AFTERBURNING, JET MIXING FLOW, COMBUSTION,  
LASERS, INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC FIELDS, ACOUSTIC MEASUREMENT, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

A SERIES OF EXPERIMENTS WAS CONDUCTED FOR THE  
PURPOSE OF CLEARLY ISOLATING AND QUANTIFYING THE  
NOISE SOURCES ASSOCIATED WITH SUPERSONIC JET NOISE  
AND FOR ESTABLISHING THE EFFECT OF REFRACTION ON THE  
RADIATED FIELD OF THESE SOURCES, AS WELL AS  
ESTABLISHING THE RANGE OF VALIDITY OF AVAILABLE  
THEORETICAL FORMULAS FOR PREDICTING THE RADIATION  
FIELD CHARACTERISTICS OF THESE SOURCES. TURBULENT  
MIXING REGION NOISE FROM A FULLY EXPANDED SUPERSONIC  
FLOW EXHAUSTING FROM A WELL DESIGNED CONVERGENT-  
DIVERGENT NOZZLE WAS MEASURED OVER A VERY WIDE RANGE  
OF OPERATIONAL PARAMETERS. THIS APPENDIX  
CONTAINS COMPUTER PRINTOUTS OBTAINED FROM A JET NOISE  
DATA ANALYSIS PROGRAM FOR TURBULENT MIXING REGION  
NOISE. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 749 142 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME V - APPENDIX II.  
SHOCK ASSOCIATED NOISE DATA.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72,

JUL 72 243P LUSH, PETER A. BURRIN,  
ROBERT H. ;

CONTRACT: F33615-71-C-1663

PROJ: AF-3066

TASK: 306614

MONITOR: AFAPL

TR-72-53-VOL-5-APP-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 6, AD-749 143, AND  
VOLUME 5, AD-749 141.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS,  
AERODYNAMIC NOISE, SOUND TRANSMISSION, GAS TURBINE  
NOZZLES, AFTERBURNING, JET MIXING FLOW, COMBUSTION,  
LASERS, INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC FIELDS, ACOUSTIC MEASUREMENT, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

A SERIES OF EXPERIMENTS WAS CONDUCTED FOR THE  
PURPOSE OF CLEARLY ISOLATING AND QUANTIFYING THE  
NOISE SOURCES ASSOCIATED WITH SUPERSONIC JET NOISE  
AND FOR ESTABLISHING THE EFFECT OF REFRACTION ON THE  
RADIATED FIELD OF THESE SOURCES, AS WELL AS  
ESTABLISHING THE RANGE OF VALIDITY OF AVAILABLE  
THEORETICAL FORMULAS FOR PREDICTING THE RADIATION  
FIELD CHARACTERISTICS OF THESE SOURCES. SHOCK-  
ASSOCIATED NOISE, BOTH DISCRETE AND BROADBAND, WAS  
INVESTIGATED THOROUGHLY. THIS APPENDIX CONTAINS  
SEQUENCES OF DATA IN THE FORM OF NARROW BAND SPECTRA  
ILLUSTRATING THE EXISTENCE OF THESE TYPES OF SHOCK  
ASSOCIATED NOISE IN THE JET FLOWS INVESTIGATED.  
(AUTHOR)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 749 143 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME VI. JET FLOW  
MEASUREMENT AND ANALYSIS WITH SPECIAL  
EMPHASIS ON REMOTE SENSING DEVICES.  
CROSSED BEAM SCHLIEREN, LASER DOPPLER  
VELOCIMETER, PULSED LASER INTERFEROMETER.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72,

JUL 72 320P FISHER, MICHAEL J. ; MAYO,  
WILLIAM T. ; MEADOWS, DONALD M. ; BURRIN, ROBERT  
H. ; REISEL, GEORGE E. ;  
CONTRACT: F33615-71-C-1663  
PROJ: AF-3066  
TASK: 306614  
MONITOR: AFAPL TR-72-53-VOL-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 5, AD-749 142.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS,  
AERODYNAMIC NOISE, SOUND TRANSMISSION, GAS TURBINE  
NOZZLES, AFTERBURNING, JET MIXING FLOW, COMBUSTION,  
LASERS, INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC MEASUREMENT, ACOUSTIC FIELDS, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

THE REPORT DESCRIBES THREE REMOTE SENSING DEVICES  
DEVELOPED TO MEASURE JET EXHAUST FLUCTUATING DENSITY  
GRADIENTS, MEAN AND TURBULENT VELOCITY AND MEAN  
TEMPERATURE ARE DESCRIBED. THESE INSTRUMENTS ARE A  
CROSSED-BEAM SCHLIEREN, A LASER DOPPLER  
VELOCIMETER, AND A PULSED LASER INTERFEROMETER. A  
JET TURBULENCE FACILITY WAS DEVELOPED, ALONG WITH  
FIVE 2 INCH DIAMETER JET NOZZLES (ONE CONVERGENT  
AND FOUR CON-DIV, UP TO MACH 2.0), FOR THE  
PURPOSE OF PROVIDING LABORATORY CONTROLLED  
CONDITIONS, IN ORDER TO PROPERLY EVALUATE THE REMOTE  
SENSING INSTRUMENTS. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 749 428 20/1 21/5 1/3  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME I. SUMMARY OF  
SUPERSONIC JET NOISE STUDIES.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 MAY 71-31  
MAY 72,

JUL 72 47P PLUMBLEE, HARRY E. ; DOAK,

PHILIP E. I

CONTRACT: F33615-71-C-1663

PROJ: AF-3066

TASK: 306614

MONITOR: AFAPL

TR-72-53-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-749 137.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC PROPERTIES),  
(\*SUPERSONIC AIRCRAFT, \*JET PLANE NOISE), ACOUSTICS, JET  
MIXING FLOW, SOUND TRANSMISSION, GAS TURBINE NOZZLES,  
AFTERBURNING, COMBUSTION, AERODYNAMIC NOISE, LASERS,  
INTERFEROMETERS

(U)

IDENTIFIERS: NEAR FIELD NOISE, \*NOISE REDUCTION,  
ACOUSTIC MEASUREMENT, ACOUSTIC FIELDS, HOLOGRAPHY,  
\*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT, FAR FIELD  
NOISE

(U)

THIS IS A SUMMARY REPORT OF THE RESULTS OF A 13-  
MONTH RESEARCH PROGRAM ON THE GENERATION AND  
REDUCTION OF SUPERSONIC JET NOISE. THIS PROGRAM  
WAS PLANNED AS THE FIRST PHASE OF A FOUR-PHASE  
EFFORT. TASKS COMPROMISING THIS PHASE 1 PROGRAM  
WERE AS FOLLOWS: REVIEWS AND EVALUATION OF EXISTING  
THEORETICAL MODELS FOR SUPERSONIC JET NOISE  
GENERATION AND RADIATION; DEVELOPMENT OF THE  
FRAMEWORK OF A NEW, UNIFIED THEORY OF AERODYNAMIC  
NOISE; DEVELOPMENT OF A NEW THEORETICAL MODEL OF  
TURBULENT MIXING REGION NOISE; DEVELOPMENT OF A NEW  
THEORETICAL MODEL FOR CALCULATING PROAGATION AND  
RADIATION OF UPSTREAM NOISE; A PRELIMINARY REVIEW OF  
COMBUSTION NOISE; TESTS ON TURBULENT MIXING REGION  
NOISE AND SHOCK-ASSOCIATED NOISE; REVIEW OF THE  
PROBLEMS OF JET FLOW MEASUREMENT AND ANALYSIS;  
DEVELOPMENT OF NEW INSTRUMENTATION FOR JET FLOW  
MEASUREMENT; ESTABLISHMENT OF FULL FACILITIES FOR THE  
TOTAL PROGRAM; FORMULATION OF THE PROGRAM FOR FUTURE  
STUDIES. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 752 279 20/1  
DEUTSCHE FORSCHUNGS- UND VERSUCHSANSTALT FUER LUFT- UND  
RAUMFAHRT E V BERLIN (WEST GERMANY)

NEW ASPECTS OF SOUND GENERATION BY CIRCULAR  
JETS, (U)

71 11P MICHALKE, ALFONS ;  
REPT. NO. DFVLR-SONDERDRUCK-179

UNCLASSIFIED REPORT  
AVAILABILITY: PUB. IN FLUID DYNAMICS  
TRANSACTIONS, V6 PT2 P439-448 1971.

DESCRIPTORS: (\*JET ENGINE NOISE, JET MIXING FLOW),  
TURBULENCE, TURBULENT BOUNDARY LAYER, BESSEL FUNCTIONS,  
FOURIER ANALYSIS, INTEGRAL TRANSFORMS, ACOUSTICS, WEST  
GERMANY (U)

THE REPORT PRESENTS A NUMERICAL ANALYSIS OF THE  
MECHANISM OF NOISE GENERATION IN JETS AND CORRELATES  
JET TURBULENCE WITH NOISE GENERATION. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 752 535 13/2 1/5  
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

NOISE ENVIRONMENTS OF CONTROL TOWERS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 72 20P CAPELL, ROBERT A. ;  
REPT. NO. EHL-M-72M-1  
PROJ: AF-EHL-NBF-133

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRPORT CONTROL TOWERS, \*NOISE), (\*JET  
FIGHTERS, \*AIRCRAFT NOISE), SOUND, AIR FORCE,  
ATTENUATION (U)  
IDENTIFIERS: \*NOISE POLLUTION, F-104 AIRCRAFT, F-105  
AIRCRAFT, F-111 AIRCRAFT, F-4 AIRCRAFT (U)

NOISE SURVEYS WERE MADE AT THE CONTROL TOWERS OF  
TWO AIR FORCE BASES. MEASUREMENTS OF THE  
INDOOR AND OUTDOOR SOUND PRESSURE LEVELS DURING  
AIRCRAFT TAKE-OFFS AND OTHER OPERATIONS WERE  
RECORDED. THESE DATA ARE PRESENTED SO THAT AN  
EVALUATION OF THE COMMUNICATION ENVIRONMENTS CAN BE  
MADE BY USING CERTAIN OPERATIONAL DATA FROM EACH  
BASE. AN EVALUATION OF THE NOISE ATTENUATION  
PROVIDED BY EACH TOWER IS ALSO MADE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 753 000 21/5 20/1  
NAVAL AIR PROPULSION TEST CENTER TRENTON N J PROPULSION  
TECHNOLOGY AND PROJECT ENGINEERING DEPT

STATE-OF-THE-ART REVIEW OF TURBINE ENGINE  
INLET NOISE.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,  
NOV 72 159P BENHAM, ROBERT B. ;  
REPT. NO. NAPTC-PE-6  
PROJ: A330-5360/218-B/1F32-432-308

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET ENGINE NOISE, \*TURBOJET INLETS),  
(\*TURBOFAN ENGINES, JET ENGINE NOISE), DESIGN, NOISE,  
ATTENUATION, INLET GUIDE VANES, DUCT INLETS, VORTICES,  
ACOUSTIC INSULATION, STATE-OF-THE-ART REVIEWS (U)  
IDENTIFIERS: VORTEX SHEDDING, NOISE REDUCTION, NOISE  
POLLUTION, TF-34 ENGINES (U)

THE REPORT POINTS OUT THAT TURBINE-TYPE ENGINE  
DESIGN IS EVOLVING IN A DIRECTION WHICH WILL MAKE FAN  
AND COMPRESSOR TURBOMACHINERY NOISE CONTINUALLY MORE  
OBSTRUSIVE. THE TF34 ENGINE IS REPRESENTATIVE OF  
'STATE-OF-THE-ART' HIGH BYPASS RATIO SUBSONIC  
TURBOFAN TECHNOLOGY. IT CONTAINS NO INLET NOISE-  
SUPPRESSION DESIGN AND THE INLET NOISE EXCEEDS  
FEDERAL AIR REGULATION PART 36 TAKE-OFF  
SIDELINE NOISE LIMITS BY ABOUT 6PNDB. THERE ARE  
DESCRIPTIONS AND THEORETICAL PRESENTATIONS EXPLAINING  
THE PRINCIPAL MECHANISMS PRODUCING THE THREE INLET  
NOISE CONTRIBUTORS; INTERACTION TONES, COMBINATION  
TONES, AND BROADBAND RADIATION. IT IS SHOWN THAT  
NOISE CONTROL CAN BE AFFECTED EITHER AT THE ROTOR-  
STATOR SOURCE OR WITH NACELLE INSTALLATION  
ATTENUATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 753 113 6/6 20/1  
ENVIRONMENTAL HEALTH LAB KELLY AFB TEX

NOISE SURVEY, F-105 OVERFLIGHTS, WICHITA  
MOUNTAINS WILDLIFE REFUGE AND VICINITY,  
FORT SILL, OKLAHOMA.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 72 69P FRAZIER, ALVIN R. ;  
REPT. NO. EHL(K)-72-21

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, ECOLOGY), (\*MILITARY  
FACILITIES, JET PLANE NOISE), FREQUENCY, MEASUREMENT,  
AIR FORCE TRAINING, TABLES(DATA), OKLAHOMA (U)  
IDENTIFIERS: F-105 AIRCRAFT, ENVIRONMENTS,  
SURVEYS (U)

A NOISE SURVEY QUANTITATED THE ENVIRONMENTAL NOISE  
LEVELS WHICH WOULD BE PRODUCED BY F-105 AIRCRAFT  
FLIGHTS OVER THE QUANAH WEAPONS RANGE LOCATED  
ON FORT SILL. DATA WERE OBTAINED AT A NEARBY  
JOB CORP CENTER, CAMP BOULDER LOCATED ON  
THE ADJOINING WICHITA MOUNTAINS WILDLIFE  
REFUGE AND THE CITIES OF CACHE AND INDIANAHOMA.  
ADVERSE EFFECTS ON THE ENVIROMENT ARE PREDICTED TO  
BE MINIMAL AND SERIOUS INTERFERENCE WITH PRESENT OR  
FUTURE LAND USES IS NOT EXPECTED. AFTER SERIOUS  
CONSIDERATION OF MANY FACTORS, THE BENEFITS TO BE  
GAINED THROUGH THE PROPOSED JOINT USE OF THIS  
EXISTING ARTILLERY RANGE OUTWEIGH THE MINIMAL ADVERSE  
EFFECTS THAT WOULD DEVELOP BECAUSE OF THE FLYBY  
NOISE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 753 397 20/1 1/3  
BOEING CO PHILADELPHIA PA VERTOL DIV

AN INVESTIGATION OF NOISE GENERATION ON A  
HOVERING ROTOR, PART II.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 FEB 71-31 JUL 72,  
NOV 72 106P STERNFELD, H. ; BOBO, C. ;  
CARMICHAEL, D. ; FUKUSHIMA, T. ; SPENCER, R. ;  
REPT. NO. D210-10550-1  
CONTRACT: DAHC04-69-C-0087  
MONITOR: AROD 8704:3-E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED JAN 71, AD-  
721 312.

DESCRIPTORS: (\*HELICOPTER ROTORS, \*PROPELLER NOISE),  
HELICOPTERS, HOVERING, VORTICES, AIRCRAFT NOISE, ROTARY  
WINGS, TEST METHODS, AIRPLANE MODELS (U)

THE STUDY IS A NATURAL EXTENSION OF THE PROGRAM TO  
INVESTIGATE NOISE GENERATION ON A HOVERING ROTOR  
REPORTED IN AN PREVIOUS INVESTIGATION. THAT PROGRAM  
ACQUIRED DATA ON A LARGE (60 FT.) DIAMETER ROTOR  
OPERATING ON A WHIRL TOWER, AND EVALUATED THAT DATA  
IN THE LIGHT OF ESTABLISHED ANALYTICAL PROCEDURES.  
THE WORK DESCRIBED IN THIS REPORT COMPARES  
AVAILABLE DATA IN ORDER TO INVESTIGATE THE EFFECTS OF  
VARIATIONS IN ROTOR DESIGN. THIS DATA, WHICH WAS  
AVAILABLE FROM OTHER TEST PROGRAMS INCLUDED  
VARIATIONS IN NUMBER OF BLADES OF SIMILAR AIRFOIL,  
AIRFOIL, AND PLATFORM. ALSO INCLUDED IS AN  
EVALUATION OF MODEL TESTING BY COMPARISON OF THE  
RESULTS OF THE FULL SIZE HELICOPTER ROTOR WITH A ONE-  
ELEVENTH SCALE MODEL. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 754 094 14/2 20/1 21/5  
PRINCETON UNIV N J DEPT OF AEROSPACE AND MECHANICAL  
SCIENCES

RESEARCH ON NOISE GENERATED BY DUCTED AIR-  
FUEL COMBUSTION SYSTEMS.

(U)

DESCRIPTIVE NOTE: ANNUAL REPT. 1 MAR 71-29 FEB 72,  
MAR 72 44P PLETT, EDELBERT G. ;  
SUMMERFIELD, MARTIN ;  
CONTRACT: N00014-67-A-0151-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET ENGINE NOISE, \*TEST FACILITIES),  
DESIGN, ANECHOIC CHAMBERS, ORIFICES, DUCTED BODIES,  
NOZZLE INSERTS, ACOUSTICS, ATTENUATION,  
BIBLIOGRAPHIES

(U)

THE DEVELOPMENT OF A JET NOISE FACILITY TO STUDY  
THE INTERACTION OF THE FLOW WITH BLUFF BODIES INSIDE  
THE DUCT RESULTING IN MORE INTENSE NOISE THAN IS  
EXPECTED FROM THE JET ITSELF IS DESCRIBED. THE  
LONG RANGE OBJECTIVE IS TO USE THE INFORMATION ON  
NOISE DUE TO BLUFF BODIES AND NON-STEADY COMBUSTION  
INSIDE THE DUCT TO RELATE THEIR RELATIVE IMPORTANCE  
AS A SOURCE OF NOISE IN AN AIRCRAFT JET ENGINE.  
THE CONSTRUCTION OF THE FLOW SYSTEM AND ANECHOIC  
CHAMBER IS DESCRIBED. AN ANALYTICAL MODEL IS  
DEVELOPED WHICH INCORPORATES SOURCES OF NOISE BOTH  
INSIDE AND OUTSIDE THE ENGINE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 754 111 20/1 1/3  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

NOISE FROM AIRCRAFT OPERATIONS, U. S.  
NAVAL AIR STATION, LEMOORE,  
CALIFORNIA.

(U)

AUG 72 35P  
REPT. NO. BBN-2225  
CONTRACT: N62474-72-C-0344

UNCLASSIFIED REPORT

DESCRIPTORS: (\*NAVAL AIR STATIONS, \*JET AIRCRAFT NOISE),  
TAKEOFF, AIRCRAFT LANDINGS, TAXIING, JET ENGINE NOISE,  
STRESS(PHYSIOLOGY), TOLERANCES(PHYSIOLOGY), AVIATION  
PERSONNEL, CALIFORNIA (U)  
IDENTIFIERS: \*LEMOORE NAVAL AIR STATION, \*NOISE  
POLLUTION, NOISE (U)

THE REPORT PROVIDES DESCRIPTIONS OF THE AIRCRAFT  
NOISE ENVIRONMENT FOR LAND AREAS ON OR IN THE  
VICINITY OF THE NAVAL AIR STATION, LEMOORE,  
CALIFORNIA. THE NOISE RESULTING FROM AIRCRAFT  
OPERATIONS AT NAS LEMOORE IS CONSIDERED IN SOME  
DETAIL FROM THE POINT OF VIEW OF LAND USE, AND ALSO  
WITH RESPECT TO POTENTIAL HEARING DAMAGE IN  
MAINTENANCE AREAS ON THE STATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 754 270 20/1 1/3  
ULTRASYSTEMS INC NEWPORT BEACH CALIF

THE EFFECTS OF LOCAL METEOROLOGICAL FACTORS  
UPON AIRCRAFT NOISE MEASUREMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. AUG-NOV 72,  
NOV 72 48P WOOTEN, D. C. ;EIDEMILLER,

R. L. ;

CONTRACT: W1-73-0382-1

MONITOR: FAA-RD 72-145

UNCLASSIFIED REPORT

DESCRIPTORS: (\*METEOROLOGICAL PHENOMENA, \*SOUND  
TRANSMISSION), (\*JET PLANE NOISE, MEASUREMENT),  
TEMPERATURE INVERSION, WIND, ATMOSPHERIC TEMPERATURE,  
HUMIDITY, ANALYSIS OF VARIANCE, STATISTICAL DATA (U)  
IDENTIFIERS: ATMOSPHERES, ATTENUATION, BOEING 737  
AIRCRAFT (U)

AIRCRAFT NOISE MEASUREMENTS FROM THE BOEING 737,  
MADE AT ORANGE COUNTY AIRPORT, SANTA ANA,  
CALIFORNIA, DURING OPERATIONAL CONDITIONS, ARE  
STATISTICALLY CORRELATED WITH THE LOCAL  
METEOROLOGICAL FACTORS INCLUDING WIND FORCE AND  
DIRECTION, TEMPERATURE, HUMIDITY BAROMETRIC PRESSURE,  
CEILING AND VISIBILITY. THE CORRELATION WAS CARRIED  
OUT USING REGRESSION TECHNIQUES AND INDICATED THAT  
THERE IS A SIGNIFICANT INVERSE CORRELATION BETWEEN  
TEMPERATURE AND NOISE LEVEL. WIND SPEED APPEARED TO  
BE OF SIGNIFICANCE IN ONE CALCULATION THAT INCLUDED  
WIND SPEEDS UP TO 25 KNOTS, BUT WAS NOT SIGNIFICANT  
WHEN THE RANGE OF WIND SPEEDS WAS 15 KNOTS AND BELOW.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 754 943 20/1 1/3  
NATIONAL AERONAUTICAL ESTABLISHMENT OTTAWA (ONTARIO)

A SIMPLE MODEL OF SHOCK CELL NOISE  
GENERATION AND ITS REDUCTION. (U)

DESCRIPTIVE NOTE: AERONAUTICAL REPT.,  
OCT 72 40P CHAN, Y. Y. ;  
REPT. NO. NAE-LR-564  
MONITOR: NRC 12923

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SOUND PITCH, ATTENUATION), (\*JETS,  
SUPERSONIC FLOW), (\*SUPERSONIC AIRCRAFT, \*JET PLANE  
NOISE), AERODYNAMIC NOISE, NOZZLE GAS FLOW,  
UNCONVENTIONAL NOZZLES, SHOCK WAVES, ACOUSTICS, SPECTRUM  
SIGNATURES, ACOUSTIC IMPEDANCE, NOZZLE AREA RATIO,  
MATHEMATICAL MODELS, CANADA (U)  
IDENTIFIERS: NEAR FIELD NOISE, NOISE GENERATION, NOISE  
REDUCTION, NOISE POLLUTION, COMPUTER AIDED DESIGN,  
DESIGN CRITERIA (U)

BASED ON THE DATA OF NEAR FIELD SURVEYS OF THE  
SOUND PRESSURE FROM A CHOKED JET, A SIMPLE MODEL IS  
PROPOSED FOR THE MECHANISM OF THE SCREECH GENERATION.  
A CONVECTED WAVE PROPAGATES DOWNSTREAM ALONG THE  
JET BOUNDARY AND IS MODULATED BY ITS INTERACTION WITH  
THE SHOCK-EXPANSION WAVES OF THE JET. THESE  
INTERACTIONS GENERATE STRONG DIPOLE RADIATIONS.  
USING THIS MODEL, AN EXCELLENT REPRODUCTION OF THE  
ESSENTIAL FEATURES OF THE EXPERIMENTAL RESULTS IS  
OBTAINED. BY PREVENTING THE FORMATION OF SHOCK  
WAVES INSIDE THE JET, THE STRONG DIPOLE RADIATION AND  
HENCE THE SCREECH NOISE CAN BE ELIMINATED. DESIGN  
DATA FOR PERFORATED NOZZLES TO ACHIEVE FULL EXPANSION  
OF THE JET ARE PROVIDED. THIS AVOIDS THE  
MECHANICAL COMPLICATION OF AN ADJUSTABLE CONVERGENT-  
DIVERGENT NOZZLE. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 756 040 21/5 20/1  
BOEING CO SEATTLE WASH COMMERCIAL AIRPLANE GROUP

727NOISE RETROFIT FEASIBILITY. VOLUME I.  
LOWER GOAL DESIGN, FABRICATION, GROUND AND  
FLIGHT TESTING.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 71-MAR 72,  
MAR 72 61P TATE, R. B. RIPLEY, H. G.  
LAMBERT, J. A. ;  
CONTRACT: DOT-FA71WA-2637  
PROJ: FAA-202-811-058  
MONITOR: FAA-RD 72-40-VOL-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC IMPEDANCE),  
(\*TURBOJET ENGINES, DESIGN), COMMERCIAL PLANES, JET  
ENGINE NACELLES, SANDWICH PANELS, HONEYCOMB CORES,  
TURBOJET EXHAUST NOZZLES, ACOUSTIC INSULATION, FLIGHT  
TESTING, COSTS (U)

IDENTIFIERS: NOISE REDUCTION, NOISE REDUCTION,  
ACOUSTIC PANELS, AIRCRAFT, BOEING 727 AIRCRAFT, JT-8D  
ENGINES (U)

THE WORK PERFORMED IN PHASE 1 OF THE CONTRACT WAS  
DESIGN, FABRICATION, AND GROUND TESTING OF A TREATED  
NACELLE CONFIGURATION CONFORMING TO THE FAA LOWER  
NOISE REDUCTION GOALS FOR THE 727 AIRPLANE. THE  
NACELLE CONFIGURATION TESTED CONSISTS OF ACOUSTICALLY  
TREATED SIDE ENGINE INLET, FAN DUCT AND TAILPIPE.  
THIS NACELLE CONFIGURATION WAS DEVELOPED BY THE  
BOEING COMPANY, FLIGHT TESTED AND CERTIFICATED IN  
JULY 1971. THE SAME NACELLE WAS THEN USED TO  
CONDUCT THE CONTRACT PHASE 1 GROUND TESTS TO OBTAIN  
COMPARATIVE ACOUSTIC AND PERFORMANCE DATA WITH THE  
BASIC, OR TARE, NACELLE. IN ADDITION, A COST  
ANALYSIS WAS PREPARED SHOWING THE RETROFIT KIT  
INSTALLATION AND DIRECT OPERATING COST (DOC)  
CHARGED TO THE 727 AIRPLANE WITH A PHASE 1 QUIET  
NACELLE. THE RESULTS OF THE FLIGHT TESTING, NOT A  
PART OF THIS CONTRACT, ARE INCLUDED IN THIS REPORT.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 757 862 13/2  
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

NOISE AND AIR POLLUTION EMISSIONS FROM  
NOISE SUPPRESSORS FOR ENGINE TEST STANDS AND  
AIRCRAFT POWER CHECK PADS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 72 138P BURNETT, RONALD D. ;  
REPT. NO. EHL-M-71M-19  
PROJ: EHL-M-AAF-127

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIR POLLUTION, \*TURBOJET ENGINES), (\*JET  
ENGINE NOISE, TURBOJET ENGINES), SUPPRESSORS, CAPTIVE  
TESTS, SAMPLING, TEST EQUIPMENT, CARBON DIOXIDE, CARBON  
MONOXIDE, HYDROCARBONS, OXYGEN, NITROGEN OXIDES,  
PARTICLES, EXHAUST GASES, GAS FLOW, VELOCITY,  
ATMOSPHERIC PRECIPITATION, WIND, JET FIGHTERS, MILITARY  
FACILITIES (U)

IDENTIFIERS: NOISE REDUCTION, NOISE REDUCTION,  
ACOUSTIC MEASUREMENT, PLUMES, F-4 AIRCRAFT, F-4C  
AIRCRAFT, F-111A AIRCRAFT, J-79-17 ENGINES, TF-30  
ENGINES, \*EMISSION (U)

THE REPORT PRESENTS IN DETAIL THE RESULTS OF THE  
ENVIRONMENTAL POLLUTION STUDIES OF THE A/F 32A-  
13, A/F 32A-14, AND A/F 32T-2 JET ENGINE  
AND AIRCRAFT NOISE SUPPRESSORS. DETAILED  
DESCRIPTIONS OF THE SAMPLING AND MEASUREMENT METHODS  
USED DURING THESE STUDIES AS WELL AS REFINED JET  
ENGINE EMISSIONS FACTORS, DESCRIPTIONS OF EXHAUST  
PLUME FORMATION, AND DISCUSSIONS OF DOWNWIND RAINOUT  
OF LIQUID DROPLETS FROM THE EXHAUST PLUME ARE  
PRESENTED. THE NOISE DATA OBTAINED ARE ALSO  
PRESENTED BUT UNLIKE THE AIR POLLUTION DATA WILL HAVE  
LITTLE GENERAL APPLICATION. HOWEVER, THE NOISE  
DATA WILL BE OF USE TO THOSE BASES ANTICIPATING OR  
CURRENTLY USING THE NOISE SUPPRESSORS STUDIED. THE  
REPORT ALSO PROVIDES DATA TO BE USED FOR DETERMINING  
THE IMPACT OF ENGINE TESTING ON LOCAL AIR QUALITY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 758 588            20/1            1/5  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF  
ENVIRONMENTAL QUALITY

AIRCRAFT SOUND DESCRIPTION SYSTEM  
BACKGROUND AND APPLICATION. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAR 73    61P    CRUZ, J. E. ;  
REPT. NO.    FAA-EQ-73-3

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*AIRPORTS), PERIODIC  
VARIATIONS, EXPOSURE(PHYSIOLOGY),  
THRESHOLDS(PHYSIOLOGY), MEASUREMENT, TAKEOFF, AIRCRAFT  
LANDINGS (U)  
IDENTIFIERS: \*NOISE POLLUTION, \*NOISE EXPOSURE,  
\*EXPOSURE TIME (U)

AN OBJECTIVE APPROACH TO DESCRIBING AIRCRAFT SOUND  
LEVELS FOR AREAS IN THE VICINITY OF AIRPORTS CALLED  
'AIRCRAFT SOUND DESCRIPTION SYSTEM' (ASDS),  
SUITABLE FOR BOTH MANUAL AND COMPUTER APPLICATION, IS  
SET FORTH. THE BASIC PREMISE OF THE CONCEPT IS TO  
STATE EXPOSURE TO AIRCRAFT SOUND IN TERMS OF THE  
AMOUNT OF TIME THAT SOUND LEVELS EXCEED A PRESELECTED  
THRESHOLD VALUE. THE RATIONALE SUPPORTING THE  
SELECTION OF THIS PROCEDURE, THE SELECTION OF THE  
THRESHOLD VALUE, AS WELL AS SOME OPERATING TIME  
CONSTANTS ARE COVERED TOGETHER WITH TWO HYPOTHETICAL  
APPLICATIONS. (AUTHOR MODIFIED ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 759 212 1/2 20/1  
HYDROSPACE-CHALLENGER INC ROCKVILLE MD

RESULTS OF NOISE SURVEYS OF SEVENTEEN  
GENERAL AVIATION TYPE AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 72 75P GRAY, DAMON C. ;  
CONTRACT: DOT-FA73WA-3179  
MONITOR: FAA-EQ 73-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, STATISTICAL DATA),  
(\*CIVIL AVIATION, AIRCRAFT NOISE), PROPELLER NOISE,  
ENGINE NOISE, TAKEOFF, APPROACH, DATA PROCESSING (U)  
IDENTIFIERS: \*NOISE POLLUTION, NOISE, GENERAL AVIATION  
AIRCRAFT (U)

NOISE LEVELS, IN TERMS OF EPNL, PNL, DBA AND  
DBD ARE PRESENTED FOR BOTH JET AND PROPELLER-DRIVEN  
GENERAL AVIATION TYPE AIRCRAFT. THE NOISE LEVELS  
WERE DERIVED FROM MEASUREMENTS TAKEN BY THE FAA AND  
NASA/LRC AT THE NATIONAL AVIATION  
FACILITIES EXPERIMENTAL CENTER (NAFEC,  
ATLANTIC CITY, NEW JERSEY, DURING JUNE  
THROUGH SEPTEMBER 1972. LEVELS DERIVED FROM  
ACTUAL TAKE-OFF AND CONSTANT ALTITUDE FLY-BYS ARE  
PRESENTED WHEREVER POSSIBLE. (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 759 862 14/2 20/1 21/5  
GRUMMAN AEROSPACE CORP BETHPAGE N Y RESEARCH DEPT

GRUMMAN JET NOISE FACILITY.

(U)

DESCRIPTIVE NOTE: RESEARCH REPT.,  
MAY 73 59P MACIULAITIS, ALGIRDAS IYEN,  
JAMES T. ILIND, ARTHUR L. ILOEFFLER, ALBERT  
L. , JR;

REPT. NO. RE-450

MONITOR: GIDEP

347.00.00.00-K4-164

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ACOUSTIC RANGES, DESIGN), (\*JET ENGINE  
NOISE, TEST FACILITIES), ACOUSTIC EQUIPMENT,  
INSTRUMENTATION, NOISE, MEASUREMENT, AERODYNAMIC NOISE,  
VORTICES, SITE SELECTION (U)  
IDENTIFIERS: NOISE, DESIGN CRITERIA (U)

THE JET NOISE TEST FACILITY OF THE GRUMMAN  
RESEARCH DEPARTMENT IS DESCRIBED IN DETAIL.  
HOT FILM ANEMOMETERS HAVE BEEN USED WITH A  
SPECIALLY DESIGNED TRAVERSING MECHANISM TO MEASURE  
MEAN AND TURBULENT VELOCITIES IN THE JET FLOW. THE  
BASIC ACOUSTIC INSTRUMENTATION CONSISTS OF  
MICROPHONES MOUNTED AT THE ENDS OF THREE 23-FOOT  
BOOMS WHICH SWING THROUGH THE NOZZLE'S AXIS OF  
SYMMETRY. THESE MICROPHONES PROVIDE INFORMATION ON  
THE DIRECTIONALITY AND STRENGTH OF THE FAR FIELD  
NOISE EMANATING FROM THE JET. FLOW AND ACOUSTIC  
MEASUREMENTS MADE TO DATE ARE IN GOOD AGREEMENT WITH  
DATA OF OTHER INVESTIGATORS. ONE OF THE MAJOR  
UNSOLVED PROBLEMS OF JET NOISE RESEARCH IS THE  
DETERMINATION OF THE DISTRIBUTION OF NOISE SOURCES  
WITHIN THE JET FLOW. (AUTHOR MODIFIED  
ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 762 296 20/1 14/2  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS

SUPERSONIC JET NOISE INVESTIGATION USING  
JET FLUCTUATING PRESSURE PROBES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 71-JUN 72,  
JUN 73 130P SCHARTON, TERRY D. ; WHITE,  
PRITCHARD H. ; RENTZ, PETER E. ;  
REPT. NO. BRN-2220  
CONTRACT: F33615-71-C-1661  
MONITOR: AFAPL TR-73-35

UNCLASSIFIED REPORT

DESCRIPTORS: (\*JET PLANE NOISE, MEASUREMENT), (\*PROBES,  
PRESSURE), DETECTORS, PERIODIC VARIATIONS, MICROPHONES,  
EXPERIMENTAL DESIGN, TEST FACILITIES, JETS, SUPERSONIC  
CHARACTERISTICS, NOSE CONES, HIGH TEMPERATURE, SUBSONIC  
CHARACTERISTICS, SOUND GENERATORS, ACOUSTIC PROPERTIES,  
EXHAUST NOZZLES, MATHEMATICAL MODELS, MODEL TESTS, CURVE  
FITTING

(U)

IDENTIFIERS: NOSE TIPS

(U)

VARIOUS MECHANISMS OF JET NOISE GENERATION ARE  
MODELED USING THE FLUCTUATING JET PRESSURES TO  
CHARACTERIZE THE SOURCES. THE SUBSONIC MIXING  
MECHANISM IS SHOWN TO DOMINATE FOR SONIC AND MILDLY  
SUPERSONIC JETS. AN INPUT-OUTPUT RELATION BETWEEN  
THE JET PRESSURE AND SOUND PRESSURE SPECTRAL  
DENSITIES IS DERIVED AND VERIFIED. FLUCTUATING  
PRESSURE PROBES ARE DEVELOPED TO MEASURE SOURCES OF  
NOISE GENERATION IN SONIC AND SUPERSONIC JET  
EXHAUSTS. JET EXHAUSTS WITH TOTAL TEMPERATURES AS  
HIGH AS 3500F MAY BE MEASURED. DEFINITIVE DATA  
ARE OBTAINED REGARDING THE PERCENTAGE OF THE SOUND  
RADIATED AT A GIVEN ANGLE AND FREQUENCY BY EACH  
REGION OF THE JET EXHAUST. SIMPLE LASER REFRACTION  
EXPERIMENTS SUPPORT THE FLUCTUATING PRESSURE  
MEASUREMENTS. (MODIFIED AUTHOR ABSTRACT)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 763 596 21/5 20/1 1/3  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

727 NOISE RETROFIT FEASIBILITY. VOLUME II.  
UPPER GOAL DESIGN, FABRICATION, AND GROUND  
TESTING.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 71-NOV 72,  
NOV 72 116P ANDERSON, J. R. RIDLEY, H.  
G. SMITH, J. W. ;  
REPT. NO. D6-60175  
CONTRACT: DOT-FA71WA-2637  
PROJ: FAA-202-551-015  
MONITOR: FAA-RD 72-40-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-756 040.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC IMPEDANCE),  
(\*TURBOJET ENGINES, DESIGN), COMMERCIAL PLANES, JET  
ENGINE NACELLES, SANDWICH PANELS, HONEYCOMB CORES,  
TURBOJET EXHAUST NOZZLES, ACOUSTIC INSULATION, FLIGHT  
TESTING, COSTS (U)

IDENTIFIERS: NOISE REDUCTION, NOISE REDUCTION,  
ACOUSTIC PANELS, AIRCRAFT, BOEING 727 AIRCRAFT, JT-8D  
ENGINES (U)

THE WORK PERFORMED IN PHASE 2 OF THE CONTRACT WAS  
DEVELOPMENT, DESIGN, FABRICATION, AND GROUND TESTING  
OF A FLIGHTWORTHY QUIET-NACELLE CONFIGURATION  
CONFORMING TO THE FAA UPPER NOISE-REDUCTION GOALS  
FOR THE 727 AIRPLANE. THE QUIET-NACELLE  
CONFIGURATION TESTED CONSISTS OF A DOUBLE-RING,  
ACOUSTICALLY TREATED, SIDE ENGINE INLET; ACOUSTICALLY  
TREATED ENGINE FAN DUCT; AND A MULTILOBE, VARIABLE-  
GEOMETRY EJECTOR/SUPPRESSOR IN THE ENGINE EXHAUST  
SYSTEM. THIS QUIET-NACELLE CONFIGURATION WAS  
GROUND TESTED TO OBTAIN COMPARATIVE ACOUSTIC AND  
PERFORMANCE DATA WITH THE PRODUCTION-BASELINE  
NACELLE. A DIRECT OPERATING COST (DOC) ANALYSIS  
WAS PREPARED BASED ON PRELIMINARY RETROFIT  
INSTALLATION COST ESTIMATES AND PREDICTED AIRPLANE  
PERFORMANCE ANALYSES. IN ADDITION, A RETROFIT KIT  
AND INSTALLATION PACKAGE WERE DEVELOPED TO OBTAIN  
REALISTIC RETROFIT KIT PRICES, INSTALLATION COSTS,  
AND MAINTENANCE COSTS TO FACILITATE THE FINAL UPDATE  
OF THE DIRECT OPERATING COST ANALYSIS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 765 470 17/2  
ARMY MEDICAL RESEARCH LAB FORT KNOX KY

SPEECH INTELLIGIBILITY TESTING WITH THE  
MODIFIED RHYME TEST IN AVIATION TYPE  
NOISE.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
MAR 73 12P MOSKO, JAMES D. ;  
REPT. NO. USAMRL-1027  
PROJ: DA-3-A-061102-B-71-P  
TASK: 3-A-061102-B-71-P-08

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SPEECH RECOGNITION, PERFORMANCE(HUMAN)),  
(\*SPEECH, \*INTELLIGIBILITY), (\*AIRCRAFT NOISE,  
INTERFERENCE), TEST METHODS, TEST EQUIPMENT, AUDITORY  
ACUITY, MALES, SIGNAL-TO-NOISE RATIO, INTENSITY,  
STATISTICAL ANALYSIS, MILITARY PERSONNEL, ARMY  
RESEARCH

(U)

IDENTIFIERS: MODIFIED RHYME TEST, EVALUATION

(U)

TWENTY-EIGHT YOUNG ADULT MALE SUBJECTS LISTENED TO  
SEVERAL VERSIONS OF A MODIFIED RHYME TEST (MRT) AT  
THREE DIFFERENT S/N RATIOS AND THREE LEVELS OF  
BACKGROUND NOISE. THE AVERAGE PERCENT CORRECT DATA  
WERE EVALUATED IN TERMS OF EAR RECEIVING SIGNALS,  
NOISE LEVEL, AND S/N RATIO. THE DATA INDICATE  
AN APPROPRIATENESS OF THE MRT PARADIGM FOR  
EVALUATING THE AUDITORY CAPABILITIES OF MILITARY  
PERSONNEL. (MODIFIED AUTHOR ABSTRACT)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 766 498 6/19  
NAVAL AEROSPACE MEDICAL RESEARCH LAB PENSACOLA FLA

THE EFFECT OF NOISE EXPOSURE DURING PRIMARY  
FLIGHT TRAINING ON THE CONVENTIONAL AND HIGH  
FREQUENCY HEARING OF NAVAL AVIATION OFFICER  
CANDIDATES.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 73 34P ROBERTSON, RONALD M. ;  
WILLIAMS, CARL E. ;  
REPT. NO. NAMRL-1190

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-739 368.

DESCRIPTORS: (\*HEARING, AIRCRAFT NOISE), (\*AIRCRAFT  
NOISE, FLIGHT CREWS), AVIATION PERSONNEL, NAVAL  
PERSONNEL, NOISE, EXPOSURE(PHYSIOLOGY),  
THRESHOLDS(PHYSIOLOGY), AUDIOMETRY, SPEECH  
RECOGNITION

(U)

THE INVESTIGATION WAS DESIGNED TO EXPLORE THE  
RELATIONSHIP BETWEEN AVIATION NOISE EXPOSURE HISTORY  
AND HIGH-FREQUENCY HEARING SENSITIVITY. THE NAMRL  
PORTION OF THE STUDY FOCUSED ON ADMINISTERING  
CONVENTIONAL AUDIOMETRY, HIGH-FREQUENCY AUDIOMETRY  
(4 KHZ - 18 KHZ), AND A SPEECH  
INTELLIGIBILITY TEST IN NOISE TO 108 NAVAL  
AVIATION OFFICER CANDIDATES PRIOR TO THE  
FOLLOWING PRIMARY FLIGHT TRAINING (APPROXIMATELY  
25-28 HOURS) IN T-34 AIRCRAFT. HEARING  
PROTECTION CONSISTED OF EITHER THE APH-6C OR  
APH-6D FLIGHT HELMET. COCKPIT NOISE LEVELS IN  
THE T-34 RANGE FROM 96-115 DBA; DURING CRUISE THE  
NOISE LEVEL IS APPROXIMATELY 100 DBA. RESULTS  
INDICATE NO SIGNIFICANT CHANGE IN HEARING SENSITIVITY  
OR SPEECH DISCRIMINATION THAT COULD BE ATTRIBUTED TO  
NOISE EXPOSURE DURING PRIMARY FLIGHT TRAINING.  
(MODIFIED AUTHOR ABSTRACT)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 767 336 1/3 20/1  
PRINCETON UNIV N J DEPT OF AEROSPACE AND MECHANICAL  
SCIENCES

NOISE GENERATION BY CYLINDRICAL SPOILERS  
IMMERSED IN AN AIR DUCT.

(U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT.,  
MAR 73 254P TOWER, T. M. ;PLETT,  
EDELBERT G. ;CHIU, H. H. ;SUMMERFIELD, MARTIN ;

REPT. NO. AMS-1092  
CONTRACT: N00014-67-A-0151-0029

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SPOILERS, \*AERODYNAMIC NOISE), (\*JET  
ENGINE NOISE, \*TURBOJET EXHAUST NOZZLES), (\*JET  
TRANSPORT PLANES, \*TURBOFAN ENGINES), COMMERCIAL PLANES,  
JET PLANE NOISE, DUCTS, VORTICES, TURBULENCE,  
MATHEMATICAL MODELS, COMPUTER PROGRAMS (U)  
IDENTIFIERS: VORTEX SHEDDING, \*NOISE GENERATION (U)

THE REPORT DESCRIBES A STUDY CONCERNED WITH THE  
EFFECT OF THIN CYLINDRICAL FLOW SPOILERS UPSTREAM OF  
THE EXIT PLANE OF A CONSTANT-AREA DUCT ON THE  
ACOUSTIC POWER OUTPUT AND DIRECTIVITY PATTERNS OF THE  
NOISE FIELD EXTERNAL TO THE DUCT. SPOILERS OF  
DIAMETER 1/16, 5/32, AND 3/16 IN. WERE PLACED AT 1/8  
IN. AND 11 IN. FROM THE EXIT PLANE OF A 1 IN.  
DIAMETER DUCT. FAR-FIELD SOUND PRESSURE LEVELS  
WERE MEASURED IN AN ANECHOIC CHAMBER OVER A MEAN  
VELOCITY RANGE OF 250 TO 900 FT/S. THE FREQUENCY  
RANGE OF THE INVESTIGATION WAS 200 HZ TO 50 KHZ,  
WHILE THE REYNOLDS NUMBER RANGE, BASED ON MEAN  
VELOCITY UPSTREAM OF THE SPOILER AND ON SPOILER  
DIAMETER, WAS 8000 TO 80,000. (MODIFIED AUTHOR  
ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 767 337 21/5 20/1  
PRINCETON UNIV N J DEPT OF AEROSPACE AND MECHANICAL  
SCIENCES

RESEARCH ON NOISE GENERATED BY DUCTED AIR-  
FUEL COMBUSTION SYSTEMS.

(U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 2, 1 MAR 72-28 FEB  
73,

MAR 73 31P PLETT, EDELBERT G. ; CHIU, H.  
H. ; SUMMERFIELD, MARTIN ;

CONTRACT: N00014-67-A-0151-0029

PROJ: NR-094-366

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL REPT. NO. 1 DATED 1  
MAR 72, AD-754 094.

DESCRIPTORS: (\*JET ENGINE NOISE, SOURCES), DUCTED  
BODIES, AFTERBURNERS, COMBUSTION, TURBULENCE,  
MATHEMATICAL MODELS, BIBLIOGRAPHIES

(U)

IDENTIFIERS: NOISE GENERATION

(U)

A TWO-PRONGED APPROACH TO THE STUDY OF NOISE  
GENERATION BY COMBUSTION IN A CONFINED FLOW SYSTEM,  
SIMILAR TO A JET ENGINE CONFIGURATION, IS DESCRIBED.  
ONE ASPECT DEALS WITH THE MECHANISMS OF NOISE  
GENERATION BY COMBUSTION; THE OTHER ASPECT DEALS WITH  
THE EFFECT OF CONFINEMENT ON THE NOISE GENERATION AND  
RADIATING PROPERTIES OF AN UNSTEADY SOLID-BODY-FLOW  
INTERACTION. THE MECHANISMS OF NOISE GENERATION BY  
COMBUSTION ARE BEING STUDIED ANALYTICALLY. IT IS  
NOTED THAT THE STEADY FLAME STRUCTURE DETERMINE THE  
BASIC THERMODYNAMIC PROPERTIES SUCH AS THE SOUND  
SPEED AND DISTRIBUTION OF HEAT RELEASE, WHICH AFFECT  
AMPLIFICATION, DISPERSION AND PROPAGATION OF SOUND.  
THE NON-STEADY FLAME CHARACTERISTICS ARE  
RESPONSIBLE FOR NOISE GENERATION; THE TURBULENT  
SCALE, PERIOD AND INTENSITY AFFECT THE BURNING RATE  
AND HEAT RELEASE RATE. THE OVERALL NOISE  
GENERATION CHARACTER IS A SUPERPOSITION OF THE STEADY  
AND NON-STEADY ACOUSTIC CHARACTERISTICS. IN STUDIES  
WITH DUCTED AND NON-DUCTED SOURCES, IT IS FOUND THAT  
THE INTERACTION BETWEEN THE DUCT AND THE NOISE SOURCE  
CAN ENHANCE THE NOISE GENERATION POTENTIAL OF THE  
SOURCE REGION. THE NOISE DUE TO UNSTEADY FLOW OVER  
SMALL STRUTS INSIDE A DUCT IS FOUND TO OVERWHELM THE  
FREE JET NOISE UP TO SPEEDS IN EXCESS OF 1000 FT/SEC.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 768 615 21/2 20/1 21/5  
GEORGIA INST OF TECH ATLANTA SCHOOL OF AEROSPACE  
ENGINEERING

COMBUSTION GENERATED NOISE IN TURBOPROPULSION  
SYSTEMS.

(U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT.,  
JUL 73 96P SHIVASHANKARA, B. N. ;  
HANDLEY, J. C. ; STRAHLE, W. C. ;  
CONTRACT: AF-AFOSR-2365-72  
PROJ: AF-9711  
TASK: 971102  
MONITOR: AFOSR TR-73-1899

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COMBUSTION, ACOUSTICS), (\*JET ENGINE  
NOISE, COMBUSTION), FLAMES, TURBULENCE, JET FLAMES,  
AFTERBURNING, POWER SPECTRA, SCREAMING COMBUSTION,  
EXPERIMENTAL DATA (U)  
IDENTIFIERS: COMBUSTION NOISE, SCALING FACTORS, NOISE  
REDUCTION, NOISE POLLUTION, ACOUSTIC RADIATION (U)

EXPERIMENTS ON NOISE RADIATION BY OPEN TURBULENT  
PREMIXED FLAMES ARE DESCRIBED. DETAILED  
DIRECTIONALITY DISTRIBUTIONS, SCALING RULES FOR  
ACOUSTIC POWER RADIATED, THERMO-ACOUSTIC EFFICIENCY  
AND SPECTRAL CONTENT ARE PRESENTED AND DISCUSSED.  
SCALING RULES FOR REACTING VOLUME ARE GENERATED BY  
A DIRECT FLAME PHOTOGRAPHY TECHNIQUE. THESE  
EXPERIMENTS ARE SHOWN TO BE QUITE USEFUL IN  
DECOMPOSING COMBUSTION NOISE SCALING LAWS. THE  
ACOUSTIC POWER IS SHOWN TO SCALE AS  $U(2.7)$   
 $U(2.8)$   $SL(1.4)$   $F(0.4)$ , AND COMBUSTION  
NOISE SPECTRA PEAK IN THE 250-700 HZ RANGE. THE  
DIRECTIONALITY IS QUITE WEAK FOR NOISE FROM OPEN  
TURBULENT FLAMES. THE EXPERIMENTAL RESULTS ARE  
CRITICALLY EXAMINED IN THE LIGHT OF THE THEORETICAL  
PREDICTIONS FROM STRAHLE'S THEORY OF COMBUSTION  
NOISE. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 768 847            20/1

FEDERAL AVIATION ADMINISTRATION WASHINGTON D C OFFICE OF  
SYSTEMS ENGINEERING MANAGEMENT

ENGINEERING AND DEVELOPMENT PROGRAM PLAN -  
AIRCRAFT NOISE AND SONIC BOOM.

(U)

JUN 73            38P  
REPT. NO.    FAA-ED-20-2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, ACOUSTIC IMPEDANCE), JET  
PLANE NOISE, SONIC BOOM, ENGINE NOISE,  
STRESS(PHYSIOLOGY), TOLERANCES(PHYSIOLOGY), LAW,  
PLANNING

(U)

IDENTIFIERS: NOISE, NOISE EXPOSURE, NOISE REDUCTION,  
NOISE REDUCTION, NOISE POLLUTION, ENVIRONMENTAL NOISE  
EXPOSURE MEASUREMENT

(U)

THE REPORT DESCRIBES A PROGRAM PLAN DESIGNED TO  
PROVIDE A DATA BASE FROM WHICH TO DEVELOP RULE MAKING  
FOR CONTROL AND ABATEMENT OF AIRCRAFT NOISE AND SONIC  
BOOM. PRIMARY OBJECTIVES ARE TO MINIMIZE THE  
ENVIRONMENTAL IMPACT OF AIRCRAFT GENERATED NOISE AND  
SONIC BOOM AND TO DEVELOP PREDICTION, REDUCTION AND  
CERTIFICATION CRITERIA FOR ALL CATEGORIES OF  
AIRCRAFT. DEVELOPMENT ACTIVITIES CURRENTLY IN  
PROGRESS PLUS PROGRAMS PLANNED FOR A PERIOD OF  
APPROXIMATELY FIVE YEARS ARE DESCRIBED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 768 850 21/5 20/1 1/3  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

727 NOISE RETROFIT FEASIBILITY. VOLUME  
III. UPPER GOAL FLIGHT TESTING AND  
PROGRAM SUMMARY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 71-DEC 72,  
JUN 73 227P HIATT, D. L. MCKAIG, M.

B. ;

REPT. NO. D6-60196  
CONTRACT: DOT-FA71WA-2637  
MONITOR: FAA-RD 72-40-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-763 596.

DESCRIPTORS: (\*JET ENGINE NOISE, ACOUSTIC IMPEDANCE),  
(\*TURBOJET ENGINES, DESIGN), COMMERCIAL PLANES, JET  
ENGINE NACELLES, SANDWICH PANELS, HONEYCOMB CORES,  
TURBOJET EXHAUST NOZZLES, ACOUSTIC INSULATION, FLIGHT  
TESTING, COSTS (U)

IDENTIFIERS: BOEING 727 AIRCRAFT, JT-8 ENGINES, JT-8D  
ENGINES, NOISE REDUCTION, NOISE REDUCTION, ACOUSTIC  
PANELS, AIRCRAFT (U)

THE WORK CONSISTED OF FLIGHT TESTING OF THE QUIET-  
NACELLE CONFIGURATION DEVELOPED IN PHASE 2 IN  
FULFILLMENT OF THE FAA UPPER NOISE REDUCTION GOALS  
FOR THE 727 AIRPLANE, ALONG WITH PARALLEL FLIGHT  
TESTING OF THE 727 PRODUCTION NACELLE AS A BASELINE.  
ALL TESTING WAS PERFORMED ON A MODEL 727-100  
AIRPLANE, WITH RESULTS EXTRAPOLATED TO THE LONG-BODY  
200 MODEL. THE PHASE 2 NACELLES CONSIST OF  
PERIPHERAL ACOUSTIC LINING IN ALL INLETS PLUS DOUBLE-  
RING ACOUSTIC TREATMENT IN THE SIDE-ENGINE INLETS;  
ACOUSTICALLY TREATED ENGINE FAN DUCTS; AND MULTILOBE  
VARIABLE-GEOMETRY JET NOISE SUPPRESSORS DISCHARGING  
THROUGH FIXED, ACOUSTICALLY LINED EJECTORS, WITH  
PROVISION FOR AUTOMATIC CLOSURE OF THE EJECTOR INLETS  
FOR CRUISE OPERATION. ACOUSTIC PROPULSION, AND  
AERODYNAMIC PERFORMANCE ANALYSES WERE MADE, ALONG  
WITH A STUDY OF THE PHYSICAL EFFECTS OF INTEGRATING  
THE PHASE 2 NACELLE ON BOTH MODEL 727S. A DIRECT-  
OPERATING-COST (DOC) ANALYSIS WAS PREPARED BASED ON  
REALISTIC RETROFIT INSTALLATION COST ESTIMATES AND  
AIRPLANE PERFORMANCE ANALYSES. IN ADDITION, A  
STUDY WAS MADE OF ENGINE AND AIRFRAME OPTIONS  
AVAILABLE FOR RECOVERY OF PERFORMANCE PENALTIES  
INCURRED BY INSTALLATION OF PHASE 2 NACELLES.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 770 185 5/10  
SOCIETY OF AUTOMOTIVE ENGINEERS INC NEW YORK

AN EVALUATION OF PSYCHOACOUSTIC PROCEDURES  
FOR DETERMINING HUMAN RESPONSE TO AIRCRAFT  
NOISE. VOLUME I. SPECIFICATIONS FOR FOUR  
EXPERIMENTS. (U)

DESCRIPTIVE NOTE: FINAL REPT.

OCT 73 66P

REPT. NO. SAE-R-12-1

CONTRACT: DOT-FA71WA-2673

MONITOR: FAA-RD 72-51-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-770 244.

DESCRIPTORS: \*AIRCRAFT NOISE, \*PSYCHOACOUSTICS,  
\*RESPONSE, HUMAN FACTORS ENGINEERING, TEST  
METHODS, LABORATORY PROCEDURES, TAPE RECORDING,  
SPECIFICATIONS, REQUIREMENTS (U)

ABSENCE OF GOOD AGREEMENT AMONG LABORATORY STUDIES  
INVOLVING HUMAN RESPONSE TO AIRCRAFT NOISE LED TO THE  
CONCLUSION THAT THE APPLICATION OF DIFFERENT  
PSYCHOACOUSTIC PROCEDURES COULD ACCOUNT FOR DIFFERING  
CONCLUSIONS. SINCE THERE IS A CONTINUING  
REQUIREMENT TO DEVELOP AN ENGINEERING CALCULATION  
PROCEDURE WHICH VALIDLY REFLECTS RESPONSE TO FLYOVER  
NOISE FROM FUTURE AIRCRAFT (STOL, VTOL, SST), A  
THREE-PHASE PROGRAM WAS CONCEPTUALIZED. THE  
DOCUMENT DEALS WITH PHASE 1: DETAILING OF  
SPECIFICATIONS AND REQUIREMENTS FOR FOUR  
PSYCHOACOUSTIC LABORATORY EXPERIMENTS PLUS THE  
ACQUISITION OF TAPE RECORDINGS OF NOISES THAT MATCH  
THE FOUR EXPERIMENTS. (MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 770 244 5/10  
SOCIETY OF AUTOMOTIVE ENGINEERS INC NEW YORK

AN EVALUATION OF PSYCHOACOUSTIC PROCEDURES  
FOR DETERMINING HUMAN NOISE: VOLUME II.  
DEMONSTRATED EXAMPLES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
OCT 73 96P MABRY, J. E. ; PARRY, H. J.

REPT. NO. SAE-R-12-2  
CONTRACT: DOT-FA71WA-2673  
MONITOR: FAA-RD 72-51-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-770 185.

DESCRIPTORS: \*PSYCHOACOUSTICS, \*AIRCRAFT NOISE,  
\*RESPONSE, LABORATORY PROCEDURES, TEST METHODS,  
PERCEPTION, QUESTIONNAIRES, STIMULI,  
INTENSITY

(U)

IDENTIFIERS: EVALUATION, COMPARISON

(U)

A VARIETY OF LABORATORY PROCEDURES HAVE BEEN USED TO MEASURE HUMAN RESPONSE TO AIRCRAFT NOISE DURING THE DEVELOPMENT OF THE EFFECTIVE PERCEIVED NOISE LEVEL (EPNL) CONCEPT. EVALUATION OF THESE PROCEDURES TO DETERMINE THEIR EFFECTIVENESS WOULD BE USEFUL IN FURTHER REFINEMENTS OF EPNL. THIS REPORT DESCRIBES A PROJECT TO DEMONSTRATE HOW FOUR OF THE LABORATORY METHODS CAN BE TESTED AND THE RESULTS USED TO PROVIDE A COMPARATIVE EVALUATION. THE GENERAL CONCLUSION IS THAT EXPERIMENTAL PLANS FOR FOUR BASIC PSYCHOACOUSTIC LABORATORY METHODS HAVE BEEN DEMONSTRATED. THE REPORT DESCRIBES SOME TENTATIVE FINDINGS THAT ARE INTERESTING AND SIGNIFICANT IN THE CONTEXT OF THE DEMONSTRATED EXAMPLES. (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 773 687 20/1 1/3  
HUMAN ENGINEERING LAB ABERDEEN PROVING GROUND MD

A TECHNIQUE FOR MEASURING THE EXTERNAL NOISE  
OF A MOVING HELICOPTER. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,  
SEP 73 75P LINC, DONALD L. ;  
REPT. NO. HEL-TM-16-73

UNCLASSIFIED REPORT

DESCRIPTORS: \*HELICOPTERS, \*JET ENGINE NOISE,  
\*ACOUSTIC DETECTION, ACOUSTIC DETECTORS, ACOUSTIC  
MEASUREMENT, FLYBY, TEST EQUIPMENT, MATHEMATICAL  
MODELS, COMPUTER APPLICATIONS (U)

A TECHNIQUE HAS BEEN DEvised TO MEASURE THE NOISE  
PRODUCED BY A MOVING HELICOPTER. THE EQUIPMENT  
USED IS EASILY PORTABLE, RELATIVELY SIMPLE, ACCURATE  
AND PROVIDES INSTANT READOUT OF AIRCRAFT SPEED AND  
ALTITUDE. THE SOUND PRESSURE LEVELS MEASURED  
DURING THE FLYOVERS HAVE BEEN CORRECTED TO A CONSTANT  
200-FOOT DISTANCE FROM THE SOURCE AND POLAR PLOTS  
HAVE BEEN PREPARED SHOWING THE CORRECTED SOUND  
PRESSURE LEVEL BY OCTAVE BANDS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 774 748 1/3 20/4  
BELL AEROSPACE CO BUFFALO N Y

JET NOISE REDUCTION TECHNIQUE FOR MILITARY  
RECONNAISSANCE/SURVEILLANCE AIRCRAFT. PHASE  
I. BENCH/WIND TUNNEL TESTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 30 JUN 71-31 JUL 72 ON  
PHASE 1,

AUG 73 150P BOSSLER, F. B. ; BARSOTTELLI,  
M. V. ; KRISHNAMOORTHY, V. ;  
REPT. NO. BAC-7389-945009  
CONTRACT: F33615-71-C-1840  
PROJ: AF-1471  
TASK: 147102  
MONITOR: AFFDL TR-72-107

UNCLASSIFIED REPORT

DESCRIPTORS: \*RECONNAISSANCE AIRCRAFT, \*JET ENGINE  
NOISE, \*NOISE REDUCTION, JET ENGINES, EXHAUST  
NOZZLES, DUCTS, STRUTS, WIND TUNNEL MODELS,  
AERODYNAMIC CHARACTERISTICS  
IDENTIFIERS: \*QUIET AIRCRAFT

(U)  
(U)

A NOVEL METHOD OF JET NOISE REDUCTION HAS BEEN  
SUBJECTED TO BENCH AND WIND TUNNEL TESTS. THIS  
METHOD USES VERY SMALL NOZZLES ARRANGED ON STRUTS  
PROTRUDING FROM THE UPPER SURFACE OF AN AIRCRAFT  
WING. THESE NOZZLES ARE INTENDED TO REPLACE THE  
CONVENTIONAL SINGLE PROPULSIVE NOZZLE OF THE JET  
ENGINE FOR THE PRIMARY PURPOSE OF REDUCING THE AURAL  
DETECTABILITY OF THE JET NOISE BY MODIFYING ITS  
FREQUENCY SPECTRUM. TESTS OF THIS CONCEPT WERE  
CONDUCTED DURING THIS PROGRAM INCLUDING ACOUSTIC  
COMPARISON OF A DOZEN DIFFERENT NOZZLE ARRANGEMENTS;  
TESTS WITH HEATED AIR; ACOUSTIC AND PROPULSION TESTS  
OF AN ARRAY OF SEVERAL THOUSAND NOZZLES; ACOUSTIC  
WIND TUNNEL TESTS OF STRUTS AND INLET CONFIGURATIONS;  
AND AERODYNAMIC WIND TUNNEL TESTS OF AN ARRAY OF 6,  
000 NOZZLES ON A WING SECTION. ADDITIONAL TASKS  
INCLUDED PRELIMINARY DESIGN OF A QUIET RESEARCH TEST  
VEHICLE AND PREDICTION OF ITS AURAL DETECTABILITY.  
TESTS OF VARIOUS NOZZLE ARRANGEMENTS RESULTED IN  
SELECTION OF A SINGLE ROW OF NOZZLES ON EACH STRUT.  
TESTS WITH HEATED AIR SHOWED THAT JET NOISE COULD  
BE PREDICTED BASED ON JET VELOCITY, INDEPENDENT OF  
JET TEMPERATURE. (MODIFIED AUTHOR ABSTRACT)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD- 775 950 20/4  
NAVAL ACADEMY ANNAPOLIS MD ENVIRONMENTAL PROTECTION  
RESEARCH AND DEVELOPMENT TEAM

FORCES ON A COANDA SURFACE. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,  
NOV 73 38P LOPARDO, VINCENT J. ;  
REPT. NO. USNA-EPRD-1

UNCLASSIFIED REPORT

DESCRIPTORS: \*COANDA EFFECT, \*CAPTIVE TESTS, \*JET  
ENGINES, \*NOISE POLLUTION, \*JET ENGINE NOISE,  
HAZARDS, HEARING, COMMUNITY RELATIONS, SURFACE  
PROPERTIES, AERODYNAMIC FORCES, AERODYNAMIC NOISE,  
DISTRIBUTION, DYNAMIC PRESSURE, NUMERICAL  
INTEGRATION, FLOW FIELDS, MATHEMATICAL MODELS,  
TEST METHODS (U)

THE OBJECT OF THE STUDY WAS TO ANALYZE THE FORCES  
ON A COANDA SURFACE. THE SURFACE ANALYZED WAS  
USED IN AN EXPERIMENTAL PROJECT FUNDED BY THE NAVAL  
AIR SYSTEMS COMMAND. THE FINAL RESULTS ARE  
BASED ON A NUMERICAL INTEGRATION OF THE PRESSURE  
DISTRIBUTION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 776 127                      1/2  
DOUGLAS AIRCRAFT CO LONG BEACH CALIF

DC-9 NOISE RETROFIT FEASIBILITY. VOLUME  
I. LOWER GOAL NOISE, PERFORMANCE AND  
COST EVALUATION, (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN 72-MAY 73,  
NOV 73 188P                      DUNBAR, W. R. ;  
REPT. NO.    MDC-J4355A  
CONTRACT:    DOT-FA72WA-3116  
MONITOR:    FAA-RD                      73-124-1

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*NOISE REDUCTION,  
\*EXHAUST SYSTEMS, \*CONTROL SYSTEMS, ENGINE  
NACELLES, TEST METHODS, STATIC TESTS, FLIGHT  
TESTING, PERFORMANCE(ENGINEERING), JET TRANSPORT  
PLANES, COST ANALYSIS, THRUST,  
ENDURANCE(GENERAL) (U)  
IDENTIFIERS: DC-9 AIRCRAFT, EVALUATION (U)

THE REPORT COVERS THE WORK PERFORMED IN PHASE 1,  
GROUND TEST AND FLIGHT TEST, OF THE PROGRAM.  
EXHAUST SYSTEM DEVELOPMENT TESTS WERE CONDUCTED ON  
AN ENGINE STATIC TEST STAND TO EVALUATE THE LOWER  
GOAL EXHAUST SYSTEM. PROTOTYPE COMPONENTS OF THE  
LOWER GOAL NACELLE WERE DESIGNED AND FABRICATED.  
THE PROTOTYPE COMPONENTS WERE TESTED FOR EFFECT ON  
ENGINE PERFORMANCE AND NOISE, AND FOR EFFECT ON THE  
COMPATIBILITY WITH THE JT8D ENGINE. A 100-HOUR  
DURABILITY TEST WAS PERFORMED, CYCLING THE PROTOTYPE  
NACELLE THROUGH AN ACCELERATED SIMULATED DUTY  
MISSION. A COMPLETE LOADS AND STRESS ANALYSIS OF  
THE NACELLE/AIRFRAME STRUCTURE WAS PERFORMED. THE  
INLET WAS TESTED IN THE ICING TUNNEL FOR ANTI-ICING  
BLEED REQUIREMENTS AND WAS TESTED FOR STRUCTURAL  
CAPABILITY TO WITHSTAND HAIL AND BIRD IMPACT. A  
20% THRUST COEFFICIENT MODEL WAS TESTED OVER A  
RANGE OF ENGINE PRESSURE RATIOS. (U)



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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD- 776 655            20/1            1/3  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)

TECHNICAL EVALUATION REPORT ON FLUID  
DYNAMICS PANEL SPECIALISTS MEETING ON NOISE  
MECHANISMS. (U)

DESCRIPTIVE NOTE: ADVISORY REPT.,  
FEB 74    19P    WILLIAMS, J. E. FLOWCS ;  
REPT. NO. AGARD-AR-66

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: MEETING HELD AT BRUSSELS, BELGIUM,  
19-21 SEP 73. PROCEEDINGS PUBLISHED AS REPT. NO.  
AGARD-CP-131. NATO FURNISHED.

DESCRIPTORS: \*AIRCRAFT NOISE, \*MEETINGS, FLOW  
FIELDS, TURBULENCE, NOISE REDUCTION, JET ENGINE  
NOISE, PROPAGATION, AERODYNAMIC NOISE (U)  
IDENTIFIERS: NOISE SOURCES (U)

CONTENTS: SOURCE IDENTIFICATION; THE  
INFLUENCE OF MEAN FLOW STRUCTURE ON THE GENERATION  
AND PROPAGATION OF SOUND; DISTINCTIVE LARGE EDDY  
STRUCTURES: ARE THEY DETERMINISTIC EVENTS;  
EXCESS NOISE; THE CONTROL OF JET NOISE; PROBLEM  
AREAS LIKELY TO BECOME MORE IMPORTANT;  
RECOMMENDATIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 777 569 1/3 20/1  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS  
RESEARCH AND DEVELOPMENT SERVICE

STOL NOISE PREDICTION AND ATTENUATION MODELS  
IN SUPPORT OF REGULATORY EFFORT. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 74 86P POWER, JOSEPH K. ;  
REPT. NO. FAA-RD-74-70

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT JOINT INTERNATIONAL  
SHORT COURSE; 'STOL AIRCRAFT TECHNOLOGY AND THE  
COMMUNITY', 22-26 APR 74.

DESCRIPTORS: \*COMMERCIAL PLANES, \*SHORT TAKEOFF  
AIRCRAFT, \*AIRCRAFT NOISE, NOISE REDUCTION,  
AERODYNAMIC NOISE, JET ENGINE NOISE, AIRPLANE  
ENGINE NOISE, REGULATIONS, MODELS (U)

FOR COMMERCIAL STOL AIRCRAFT THE MOST CRITICAL  
DESIGN PARAMETER IS THE NOISE LEVEL. THIS PAPER  
DISCUSSES THE IMPACT OF EXISTING AND EXPECTED NOISE  
REGULATIONS ON THE DEVELOPMENT OF STOL AIRCRAFT.  
MODELS FOR STOL NOISE PREDICTION ARE PRESENTED,  
AS WELL AS NOISE REDUCTION MECHANISMS AND A RANKING  
OF V/STOL AIRCRAFT NOISE SOURCES. THE REPORT  
WAS PRESENTED AS PART OF SHORT COURSE IN STOL  
TECHNOLOGY 'STOL AIRCRAFT TECHNOLOGY AND THE  
COMMUNITY', JOINTLY SPONSORED BY THE UNIVERSITY  
OF TENNESSEE SPACE INSTITUTE AND THE  
TECHNICAL UNIVERSITY OF AACHEN, GERMANY.  
PARTICIPANTS INCLUDED NATIONALS OF GERMANY,  
CANADA, UNITED KINGDOM AS WELL AS INDUSTRY  
PARTICIPANTS THROUGHOUT THE U.S. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 777 895 1/3 20/1 21/5  
DOUGLAS AIRCRAFT CO LONG BEACH CALIF

DC-9 NOISE RETROFIT FEASIBILITY. VOLUME  
II. UPPER GOAL NOISE, PERFORMANCE AND  
COST EVALUATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN-SEP 73,  
DEC 73 159P WHALLON, H. D. ;  
REPT. NO. MDC-J4356  
CONTRACT: DOT-FA72WA-3116  
MONITOR: FAA-RD 73-124-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED NOV 73, AD-  
776 127.

DESCRIPTORS: \*PASSENGER AIRCRAFT, \*JET ENGINE NOISE,  
\*NOISE REDUCTION, JET ENGINES, JET ENGINE  
NACELLES, EXPERIMENTAL DESIGN, EXHAUST NOZZLES,  
MODIFICATION, COST ANALYSIS (U)

IDENTIFIERS: DC-9 AIRCRAFT, \*RETROFIT, JT8D-9  
ENGINES (U)

THE WORK DESCRIBED IN THE REPORT COVERS THE WORK  
PERFORMED IN PHASE II OF THIS PROGRAM. THIS  
UPPER GOAL NACELLE CONFIGURATION STUDY WAS  
DIRECTED TOWARD NOISE REDUCTION GOALS OF 4, 4, 5, AND  
10 EPNDB AT THE FEDERAL AVIATION  
REGULATIONS (FAR) PART 36 SIDELINE, TAKEOFF,  
CUTBACK, AND APPROACH MEASUREMENT CONDITIONS,  
RESPECTIVELY. EXHAUST SYSTEM DEVELOPMENT TESTS  
WERE CONDUCTED ON AN ENGINE STATIC TEST STAND TO  
EVALUATE THE UPPER GOAL EXHAUST SYSTEM.  
COMPONENTS OF THE UPPER GOAL NACELLE WERE  
DESIGNED AND FABRICATED. THE COMPONENTS WERE GROUND  
STATIC TESTED FOR EFFECT ON ENGINE PERFORMANCE AND  
NOISE. THE INITIAL DAISY-WITH-EJECTOR  
CONFIGURATION SHOWED GOOD ACOUSTICAL RESULTS BUT WITH  
UNACCEPTABLE PERFORMANCE LOSSES, EVEN AFTER A NUMBER  
OF MODIFICATIONS. AN ALTERNATIVE CONFIGURATION,  
USING THE SAME TEST HARDWARE BUT ADJUSTED TO PROVIDE  
QUIETING BY ENLARGING THE NOZZLE AREA, ESSENTIALLY  
MET ACOUSTICAL AND PERFORMANCE REQUIREMENTS.  
STATIC TESTS DEMONSTRATED PREDICTED INFLIGHT NOISE  
REDUCTIONS OF 4.7, 4.0, 3.9, AND 10.1 EPNDB AT  
THE SIDELINE, TAKEOFF, CUTBACK, AND APPROACH  
MEASUREMENT CONDITIONS, RESPECTIVELY, WHICH  
APPROXIMATE THE FAA UPPER GOAL VALUES.  
(MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 782 165 21/5 20/1  
CALSPAN CORP BUFFALO N Y

EFFECTS OF FINITE DUCT LENGTH AND BLADE  
CHORD ON NOISE GENERATION BY A ROTATING  
BLADE ROW, (U)

JUN 74 17P LORDI, J. A. ; HOMICZ, G.  
F. ; REHM, R. G. ;  
CONTRACT: F44620-69-C-0130  
PROJ: AF-9781  
TASK: 978102  
MONITOR: AFOSR TR-74-1096

UNCLASSIFIED REPORT  
AVAILABILITY: PAPER COPY AVAILABLE FROM AIAA  
FLUID AND PLASMA DYNAMICS CONFERENCE (7TH),  
HELD IN PALO ALTO, CALIF., ON 17-19 JUN 74, PC  
\$2.00/MF \$1.00. PAPER NO. AIAA-74-555.

DESCRIPTORS: \*TURBOFAN ENGINES, \*JET ENGINE NOISE,  
\*COMPRESSOR NOISE, COMPRESSOR BLADES, TURBINE  
BLADES, NOISE POLLUTION, DUCTS, NOISE REDUCTION,  
NUMERICAL ANALYSIS (U)

A THEORETICAL STUDY OF DISCRETE-TONE NOISE  
GENERATION BY TRANSONIC FAN OR COMPRESSOR BLADE ROWS  
IS PRESENTED. A LINEARIZED ANALYSIS IS MADE OF THE  
THREE-DIMENSIONAL DISTURBANCE FIELD PRODUCED BY A  
ROTOR LOCATED AT A FINITE DISTANCE FROM THE OPEN END  
OF AN UNFLANGED SEMI-FINITE DUCT. THE PRESENCE OF  
A UNIFORM MEAN FLOW IS ACCOUNTED FOR AND THE SOUND  
FIELD IS RELATED TO THE BLADE THICKNESS AND LOADING  
DISTRIBUTIONS. THE DISTURBANCES PRODUCED BY THE  
BLADE THICKNESS AND LOADING ARE OBTAINED BY  
SUPERPOSITION OF SOLUTIONS FOR ROTATING SOURCES AND  
DIPOLES. THE SOLUTIONS FOR POINT SINGULARITIES IN  
THE PRESENCE OF A MEAN FLOW ARE OBTAINED BY A  
TRANSFORMATION OF THE CORRESPONDING SOLUTIONS IN A  
MEDIUM AT REST. THE TRANSFORMED PROBLEM IS SOLVED  
BY EXTENDING CLASSICAL RESULTS FOR THE REFLECTION AND  
RADIATION OF ACOUSTIC WAVES FROM THE OPEN END OF AN  
UNFLANGED DUCT TO ACCOUNT FOR SOURCES IN THE FIELD.  
(MODIFIED AUTHOR ABSTRACT) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD- 783 234 1/3 20/1  
AIR FORCE MATERIALS LAB WRIGHT-PATTERSON AFB OHIO

CONSTRAINED LAYER TREATMENTS FOR NOISE  
CONTROL IN A HELICOPTER. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP-DEC 72,  
MAR 74 53P JONES, DAVID I. G. ;  
REPT. NO. AFML-TR-73-305  
PROJ: AF-7351  
TASK: 735106  
MONITOR: GIDEP 347.15.00.00-67-13

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACOUSTIC INSULATION, \*AIRCRAFT NOISE,  
\*AIRCRAFT CABINS, \*HELICOPTERS, DAMPING, NOISE  
CONTROL, RESONANCE, VIBRATION, FLIGHT TESTING,  
HOVERING, FOAM (U)  
IDENTIFIERS: HH-53C AIRCRAFT, H-53 AIRCRAFT (U)

THE REPORT DESCRIBES SOME OF THE RESULTS OF AN INVESTIGATION TO EVALUATE THE EFFECT OF CONSTRAINED LAYER DAMPING TREATMENTS ON CABIN NOISE LEVELS IN AN HH-53C HELICOPTER. VIBRATION AND NOISE LEVELS WERE MEASURED FOR VARIOUS FLIGHT CONDITIONS, INCLUDING HOVER, FORWARD FLIGHT AND BANKED, AND IN EACH CASE IT WAS OBSERVED THAT THE DAMPING TREATMENT REDUCED VIBRATION AND NOISE LEVELS IN CERTAIN FREQUENCY BANDS WITHIN WHICH NATURAL MODES OF VIBRATION WERE STRONGLY EXCITED. GROUND VIBRATION TESTS UNDER ARTIFICIAL EXCITATION AND LABORATORY VIBRATION TESTS ON SIMPLER BUT RELATED STRUCTURES WERE ALSO CONDUCTED TO FURTHER UNDERSTAND THE PHENOMENA INVOLVED AND TO DEVELOP APPROPRIATE DAMPING TREATMENTS FOR BROAD TEMPERATURE RANGE NOISE CONTROL APPLICATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 784 841 1/5 13/2  
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

COMMUNITY NOISE SURVEY-OFFUTT AFB,  
NEBRASKA,

(U)

JUL 73 61P BURNETT, RONALD D. ;  
REPT. NO. EHL-M-73M-7  
PROJ: EHL-M-NAF-315

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIR FORCE FACILITIES, \*LANDING  
FIELDS, \*AIRCRAFT NOISE, URBAN AREAS, LAND AREAS,  
URBAN PLANNING, NOISE POLLUTION

(U)

IDENTIFIERS: NOISE POLLUTION, LOCAL STUDIES

(U)

THE COMMUNITY NOISE INTRUSION RESULTING FROM  
OFFUTT AFB KC 135A TAKEOFFS WAS EVALUATED AT 25  
SITES IN AND AROUND OFFUTT AFB. INCLUDED IN THE  
EVALUATION WAS AN AREA CURRENTLY BEING CONSIDERED FOR  
THE CONSTRUCTION OF A MULTIMILLION DOLLAR  
RESIDENTIAL-INDUSTRIAL COMPLEX. NOISE LEVELS  
(DBA) AND THEIR DURATION WERE DETERMINED.  
THESE DATA WERE USED TO ESTIMATE COMPOSITE  
NOISE RATINGS (CNR'S), NOISE EXPOSURE  
FORECASTS (NEF'S) AND COMMUNITY NOISE  
EQUIVALENT LEVELS (CNEL'S) AT EACH  
MEASUREMENT SITE. EXPECTED COMMUNITY RESPONSE AND  
COMPATIBLE LAND USE CRITERIA ARE DISCUSSED IN  
RELATION TO THE VARIOUS NOISE RATING VALUES  
(DBA'S, CNR'S, NEF'S, AND CNEL'S)  
CALCULATED FOR EACH SITE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 785 028 21/5 20/1  
PRINCETON UNIV N J DEPT OF AEROSPACE AND MECHANICAL  
SCIENCES

RESEARCH ON NOISE GENERATED BY DUCTED AIR-  
FUEL COMBUSTION SYSTEMS. (U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 3, MAR 73-FEB 74,  
JUN 74 30P PLETT, E. G. ; CHIU, H. H.  
; SUMMERFIELD, M. ;  
CONTRACT: N00014-67-A-0151-0029

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL REPT. NO. 2, AD-  
767 337

DESCRIPTORS: \*GAS TURBINES, \*JET ENGINE NOISE,  
SOURCES, COMBUSTORS, TURBOMACHINERY, COMBUSTION,  
DUCTED BODIES, JET FLAMES, MATHEMATICAL MODELS (U)  
IDENTIFIERS: \*NOISE GENERATION, \*NOISE  
SOURCES (U)

A TWO-PRONGED APPROACH TO THE STUDY OF NOISE  
GENERATION BY COMBUSTION IN A CONFINED FLOW SYSTEM,  
SIMILAR TO A JET ENGINE CONFIGURATION, HAS BEEN  
FOLLOWED. ONE ASPECT DEALS WITH THE MECHANISMS OF  
NOISE GENERATION BY COMBUSTION; THE OTHER ASPECT  
DEALS WITH THE EFFECT OF CONFINEMENT ON THE NOISE  
GENERATION AND RADIATING PROPERTIES OF AN UNSTEADY  
COMBUSTION-DUCT-FLOW INTERACTION. MECHANISMS OF  
SOUND GENERATION, AMPLIFICATION AND SCATTERING BY  
VARIOUS COMBUSTION SYSTEMS HAVE BEEN STUDIED ON  
THEORETICAL BASES COMPATIBLE WITH THE CONTEMPORARY  
UNDERSTANDING OF UNSTEADY BURNING PROCESSES. SOUND  
GENERATION MECHANISMS ARE CLASSIFIED INTO CATEGORIES  
RELATING TO THE SMITH-KILHAM EMISSION MECHANISM  
AND THE TURBULENT DRIVEN RIJKE-RIESS EMISSION  
MECHANISM. (MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 785 360 20/1 1/3 15/5  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

COMMUNITY NOISE EXPOSURE RESULTING FROM  
AIRCRAFT OPERATIONS: COMPUTER PROGRAM  
OPERATOR'S MANUAL.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 74 217P REDDINGIUS, NICOLAAS H. ;  
REPT. NO. BBN-2582  
CONTRACT: F33615-74-C-4160  
PROJ: AF-7231  
TASK: 723104  
MONITOR: AMRL TR-73-108

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: \*MILITARY FACILITIES, \*AIRCRAFT NOISE,  
FLIGHT, NOISE POLLUTION, RUNWAYS, NAVIGATIONAL  
AIDS, FORTRAN, USER NEEDS, COMPUTER  
PROGRAMMING

(U)

IDENTIFIERS: \*NOISE EXPOSURE, GROUND RUNUP,  
FORTRAN 4 PROGRAMMING LANGUAGE

(U)

A USER ORIENTED DESCRIPTION OF A COMPUTER PROGRAM  
TO CALCULATE COMMUNITY NOISE EXPOSURE DUE TO AIRCRAFT  
OPERATIONS IS GIVEN. FORMAL DEFINITION OF ALL  
ALLOWABLE CARD SEQUENCES AND EXAMPLES OF CODING FOR  
ALL TYPES OF AIRCRAFT OPERATIONS ARE PRESENTED AS  
WELL AS GUIDELINES FOR EFFICIENT USE. THE PROGRAM  
WHICH IS ENTIRELY WRITTEN IN FORTRAN 4 PRODUCES  
PRINTED OUTPUT AS WELL AS OUTPUT COMPATIBLE WITH THE  
CALCOMP GPCP CONTOURING PACKAGE. A DISCUSSION  
OF THE ARCHITECTURE OF THE PROGRAM AND THE  
INTERPRETATION OF THE OUTPUT CAN BE FOUND IN  
COMPANION VOLUMES AMRL-TR-109 AND AMRL-TR-73-  
105, RESPECTIVELY. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 785 485      21/2      20/1      21/5  
GEORGIA INST OF TECH ATLANTA SCHOOL OF AEROSPACE  
ENGINEERING

COMBUSTION GENERATED NOISE IN TURBOPROPULSION  
SYSTEMS. (U)

DESCRIPTIVE NOTE: INTERIM REPT. JUN 73-MAY 74,  
JAN 74 69P STRAHLE, W. C. ;  
SHIVASHANKARA, B. N. ; HANDLEY, J. C. ;  
MUTHUKRISHNAN, M. ;  
CONTRACT: AF-AFOSR-2365-72  
PROJ: AF-9711  
TASK: 971102  
MONITOR: AFOSR TR-74-1438

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED 24 JUL 73,  
AD-768 615.

DESCRIPTORS: \*JET ENGINE NOISE, \*COMBUSTION, \*JET  
FLAMES, POWER SPECTRA, ACOUSTICS, FAR FIELD,  
COMBUSTION STABILITY, NOISE POLLUTION, SCALING  
FACTORS (U)

IDENTIFIERS: \*COMBUSTION NOISE (U)

CONTINUATION OF EXPERIMENTAL AND THEORETICAL WORK  
ON THE PROBLEM OF COMBUSTION GENERATED NOISE IN  
TURBOPROPULSION SYSTEMS IS PRESENTED. TASKS  
COMPLETED DURING THE CURRENT PERIOD HAVE BEEN (A)  
EXPERIMENTAL AND THEORETICAL CORRELATION OF NOISE  
POWER AND SPECTRA FROM OPEN PREMIXED FLAMES OF  
PROPANE, PROPYLENE, ETHYLENE AND ACETYLENE-AIR,  
(B) CROSSCORRELATION OF C2 EMISSION WITH THE  
FAR FIELD ACOUSTIC PRESSURE, AND (C) EXPERIMENTAL  
AND THEORETICAL INVESTIGATION OF DUCTING EFFECTS UPON  
THE NOISE RADIATING CAPABILITY OF THE FLAME. THE  
NOISE RADIATION FROM SIMPLE FLAME TYPES IS NOW  
UNDERSTOOD WITH SUFFICIENT THEORETICAL AND  
EXPERIMENTAL DETAIL THAT ESTIMATES MAY BE MADE FOR  
COMBUSTION NOISE IN TURBOPROPULSION SYSTEMS.  
(MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 467 20/1 21/5 1/3  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

SUPERSONIC JET EXHAUST NOISE  
INVESTIGATION.

(U)

DESCRIPTIVE NOTE: INTERIM REPT. DEC 72-DEC 73,  
JUN 74 282P KNOTT, PAUL R. ;  
CONTRACT: F33615-73-C-2031  
PROJ: AF-3066  
TASK: 306614  
MONITOR: AFAPL TR-74-25

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: \*SUPERSONIC AIRCRAFT, \*JET ENGINE  
NOISE, \*NOISE REDUCTION, EXHAUST NOZZLES,  
AERODYNAMIC NOISE, FLOW FIELDS, ACOUSTIC  
SIGNATURES, POWER SPECTRA, TURBULENCE  
IDENTIFIERS: \*NOISE SUPPRESSION

(U)

(U)

THIS PROGRESS REPORT SUMMARIZES THE MAJOR  
THEORETICAL AND EXPERIMENTAL EFFORTS PERFORMED DURING  
THE FIRST YEAR OF A TWO-YEAR PROGRAM SPONSORED BY THE  
AIR FORCE AND THE DEPARTMENT OF  
TRANSPORTATION ON SUPERSONIC JET EXHAUST  
NOISE. THE OVERALL OBJECTIVE OF THE PROGRAM IS  
TO DEVELOP THE TECHNOLOGY TO SIGNIFICANTLY REDUCE  
SUPERSONIC AIRCRAFT PROPULSION SYSTEM NOISE WITH  
MINIMUM ASSOCIATED PERFORMANCE AND WEIGHT PENALTIES.  
TO REACH THE OBJECTIVES OF THIS PROGRAM A VARIED  
AND COMPREHENSIVE RESEARCH PROGRAM IS BEING CARRIED  
OUT TO DEVELOP THE BASIC THEORY AND EXPERIMENTAL  
METHODS FOR UNDERSTANDING AND QUANTIZING THE ACOUSTIC  
CHARACTERISTICS OF SIMPLE SUPERSONIC JETS FOR A RANGE  
OF VELOCITIES AND TEMPERATURES TYPICAL OF PRESENT AND  
FUTURE MILITARY AND COMMERCIAL SUPERSONIC AIRCRAFT  
PROPULSION SYSTEMS. (MODIFIED AUTHOR  
ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 612 20/1 1/5  
MITRE CORP MCLEAN VA

AIRCRAFT SOUND DESCRIPTION SYSTEM (ASDS)  
APPLICATION PROCEDURES, VOLUME I. OVERVIEW,

(U)

MAR 74 18P GOLDMAN, DONALD ; MAGINNIS,  
FRANCIS X. ;  
REPT. NO. MTR-6616-VOL-1  
CONTRACT: DOT-FA69NS-162  
MONITOR: FAA-EQ 74-2-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-786 613 AND  
REPORT DATED MAR 73, AD-758 588.

DESCRIPTORS: \*AIRPORTS, \*AIRCRAFT NOISE, NOISE  
POLLUTION, PERIODIC VARIATIONS,

EXPOSURE (PHYSIOLOGY), ACOUSTIC MEASUREMENT,  
AIRCRAFT LANDINGS, TAKEOFF, DATA ACQUISITION

(U)

IDENTIFIERS: \*NOISE EXPOSURE, \*AIRCRAFT SOUND  
DESCRIPTION SYSTEMS, \*EXPOSURE TIME, SCENARIOS,  
\*NOISE LEVELS

(U)

THE AIRCRAFT SOUND DESCRIPTION SYSTEM  
(ASDS) IS A METHOD OF DESCRIBING AIRCRAFT NOISE.  
IT HAS BEEN ESTABLISHED AS THE BASIC FAA  
TECHNIQUE FOR PREDICTING COMMUNITY NOISE EXPOSURE  
CAUSED BY AIRCRAFT OPERATIONS. THIS REPORT (IN  
FOUR VOLUMES) CONTAINS A DESCRIPTION OF THE MANUAL  
AND COMPUTER TECHNIQUES FOR APPLYING ASDS AS WELL  
AS A CURRENT SET OF NOISE EXPOSURE CONTOURS. IN  
THIS VOLUME, A GENERAL INTRODUCTION TO THE  
APPLICATION PROCEDURES IS PRESENTED. THE MATERIAL  
IN SUBSEQUENT VOLUMES IS DESCRIBED, AND THE REQUIRED  
DATA PREPARATION AND BASIC METHODOLOGY USED IN  
PERFORMING AN ASDS APPLICATION ARE PRESENTED.  
(MODIFIED AUTHOR ABSTRACT)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 613 20/1 1/5  
MITRE CORP MCLEAN VA

AIRCRAFT SOUND DESCRIPTION SYSTEM (ASDS)  
APPLICATION PROCEDURES. VOLUME II. MANUAL  
APPLICATION PROCEDURES, (U)

MAR 74 71P GOLDMAN, DONALD 'MAGINNIS,  
FRANCIS X. ;  
REPT. NO. MTR-6616-VOL-2  
CONTRACT: DOT-FA69NS-162  
MONITOR: FAA-EQ 74-2-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-786 612,  
VOLUME 3, AD-786 614 AND REPORT DATED MAR 73, AD-758  
588.

DESCRIPTORS: \*AIRPORTS, \*AIRCRAFT NOISE, NOISE  
POLLUTION, PERIODIC VARIATIONS,  
EXPOSURE(PHYSIOLOGY), ACOUSTIC MEASUREMENT,  
AIRCRAFT LANDINGS, TAKEOFF, DATA PROCESSING (U)  
IDENTIFIERS: \*NOISE EXPOSURE, \*EXPOSURE TIME,  
\*NOISE LEVELS, \*AIRCRAFT SOUND DESCRIPTION  
SYSTEMS, SCENARIOS (U)

THE AIRCRAFT SOUND DESCRIPTION SYSTEM  
(ASDS) IS A METHOD OF DESCRIBING AIRCRAFT NOISE.  
IT HAS BEEN ESTABLISHED AS THE BASIC FAA  
TECHNIQUE FOR PREDICTING COMMUNITY NOISE EXPOSURE  
CAUSED BY AIRCRAFT OPERATIONS. THIS REPORT (IN  
FOUR VOLUMES) IS A DESCRIPTION OF THE MANUAL AND  
COMPUTER TECHNIQUES FOR APPLYING ASDS AS WELL AS A  
CURRENT SET OF NOISE EXPOSURE CONTOURS. THIS  
VOLUME PRESENTS THE MANUAL PROCEDURE FOR DEVELOPING  
AN AIRCRAFT SOUND DESCRIPTION SYSTEM (ASDS)  
APPLICATION IN A STEP-BY-STEP FASHION. THIS  
PROCEDURE DEVELOPS THE AIRCRAFT NOISE EXPOSURE VALUES  
AND THE 'SITUATION INDEX.' DATA FORMS AND  
PICTORIAL LAYOUTS ARE USED TO ILLUSTRATE THE  
PROCEDURE. A SAMPLE APPLICATION IS PRESENTED TO  
EXPLAIN THE DETAILS OF EACH STEP. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 786 615 20/1 1/5  
MITRE CORP MCLEAN VA

AIRCRAFT SOUND DESCRIPTION SYSTEM (ASDS)  
APPLICATION PROCEDURES. VOLUME IV.  
COMPUTER APPLICATION PROCEDURES,

(U)

MAR 74 124P GOLDMAN, DONALD ; MAGINNIS,  
FRANCIS X. ;  
REPT. NO. MTR-6616-VOL-4  
CONTRACT: DOT-FA69NS-162  
MONITOR: FAA-EQ 74-2-4

UNCLASSIFIED REPORT

AVAILABILITY: AVAILABLE IN MICROFICHE ONLY.  
SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-786 614 AND  
REPORT DATED MAR 73, AD-758 588.

DESCRIPTORS: \*AIRPORTS, \*AIRCRAFT NOISE, NOISE  
POLLUTION, PERIODIC VARIATIONS,  
EXPOSURE(PHYSIOLOGY), ACOUSTIC MEASUREMENT,  
AIRCRAFT LANDINGS, TAKEOFF, COMPUTER APPLICATIONS,  
COMPUTER PROGRAMS

(U)

IDENTIFIERS: \*NOISE EXPOSURE, \*EXPOSURE TIME,  
\*NOISE LEVELS, \*AIRCRAFT SOUND DESCRIPTION  
SYSTEMS, SCENARIOS

(U)

THE AIRCRAFT SOUND DESCRIPTION SYSTEM  
(ASDS) IS A METHOD OF DESCRIBING AIRCRAFT NOISE.  
IT HAS BEEN ESTABLISHED AS THE BASIC FAA  
TECHNIQUE FOR PREDICTING COMMUNITY NOISE EXPOSURE  
CAUSED BY AIRCRAFT OPERATIONS. THIS REPORT (IN  
FOUR VOLUMES) IS A DESCRIPTION OF THE MANUAL AND  
COMPUTER TECHNIQUES FOR APPLYING ASDS AS WELL AS A  
CURRENT SET OF NOISE EXPOSURE CONTOURS. THIS  
VOLUME PRESENTS COMPUTER APPLICATION PROCEDURES FOR  
ASDS. A COMPUTER PROGRAM PACKAGE THAT IMPLEMENTS  
THE ASDS METHODOLOGY IS DESCRIBED. THE PACKAGE  
CONSISTS OF A THREE PROGRAM SEQUENCE WHICH PERFORMS  
AN ASDS ANALYSIS FOR A GIVEN SCENARIO, AND TWO DATA  
REDUCTION PROGRAMS WHICH ASSIST IN ANALYZING THE  
NOISE EXPOSURE DATA PRODUCED BY THE ANALYSIS  
SEQUENCE. INSTRUCTIONS FOR PREPARING THE REQUIRED  
INPUT DATA AND RUNNING THE PROGRAMS ARE PRESENTED  
WITH ILLUSTRATIVE EXAMPLES, AND THE VARIOUS OUTPUTS  
PRODUCED BY THE PROGRAMS ARE DESCRIBED. (MODIFIED  
AUTHOR ABSTRACT)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 787 192 20/1 20/4  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET EXHAUST NOISE: A PROGRESS REPORT  
ON STUDIES OF JET NOISE GENERATION AND  
RADIATION, TURBULENCE STRUCTURE AND LASER  
VELOCIMETRY. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. NOV 72-FEB 74,  
JUN 74 190P PLUMBLEE, HARRY E. , JR;  
REPT. NO. LG74ER0010  
CONTRACT: F33615-73-C-2032  
PROJ: AF-3066  
TASK: 306614  
MONITOR: AFAPL TR-74-24

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: \*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT,  
\*EXHAUST GASES, JET FLOW, NOISE GENERATORS,  
THEORY, RADIATION, ACOUSTIC WAVES, LASER  
VELOCIMETERS, EXPERIMENTAL DATA, MATHEMATICAL  
MODELS, TEST METHODS, ANECHOIC CHAMBERS, TEST  
FACILITIES, HIGH TEMPERATURE, VELOCITY,  
TURBULENCE (U)

THE REPORT SUMMARIZES THE MAJOR THEORETICAL AND  
EXPERIMENTAL EFFORTS PERFORMED DURING THE FIRST YEAR  
OF A TWO-YEAR PROGRAM DEALING WITH SUPERSONIC JET  
NOISE. SPECIFIC TECHNICAL RESULTS ARE PRESENTED ON  
THE RADIATION OF SOUND SOURCES IN A JET SHEAR LAYER,  
A THEORETICAL STUDY OF THE LARGE SCALE NOISE  
PRODUCING STRUCTURE OF JETS, THE DESIGN, CONSTRUCTION  
AND CALIBRATION OF A HIGH TEMPERATURE ANECHOIC  
FACILITY FOR JET NOISE EXPERIMENTS, A SERIES OF HIGH  
TEMPERATURE SUBSONIC AND SUPERSONIC JET NOISE  
EXPERIMENTS, AND THE DESIGN AND DEVELOPMENT OF A  
LASER VELOCIMETER FOR THE MEASUREMENT OF MEAN FLOW  
VELOCITY AND ORTHOGONAL COMPONENTS OF TURBULENCE  
VELOCITY. (MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 888 802 20/1 1/3  
PATROL ASW DEVELOPMENT GROUP NORFOLK VA

P-3C AMBIENT AIRCRAFT NOISE, (U)

JUN 71 46P BORTHWICK, R. B. ;  
REPT. NO. PATASWDEVGRU-44

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*PATROL AIRCRAFT),  
(\*ANTISUBMARINE AIRCRAFT, AIRCRAFT NOISE), PROPELLER  
NOISE, HEARING, STRESS(PSYCHOLOGY), FATIGUE(PHYSIOLOGY),  
AVIATION MEDICINE (U)  
IDENTIFIERS: P-3 AIRCRAFT, P-3C AIRCRAFT (U)

THE PURPOSE OF THE REPORT IS TO PROVIDE THE FLEET  
USER WITH INFORMATION REGARDING AMBIENT AIRCRAFT  
NOISE LEVELS OCCURRING IN THE AUDIO SPECTRUM. IT  
ALSO SERVES AN ADDITIONAL PURPOSE IN PROVIDING  
TECHNICAL AGENCIES AND DEVELOPMENT LABORATORIES WITH  
INFORMATION REGARDING EXISTING AIRCRAFT SYSTEMS.  
THE ULTIMATE OBJECTIVE, FOR EITHER FLEET OR  
DEVELOPMENT COMMUNITIES, IS TO PROVIDE A BASE CASE  
FROM WHICH TO PROCEED IN ANY OF THEIR STUDIES AND  
ESTABLISHMENT OF AMBIENT AIRCRAFT NOISE LEVELS IN  
FUTURE AIRBORNE SYSTEMS. THE EQUIPMENT USED  
PROVIDES A VERY ACCURATE FREQUENCY IDENTIFICATION TO  
SOUND PRESSURE LEVELS. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 891 216 20/1 9/2  
HYDROSPACE RESEARCH CORP ROCKVILLE MD

COMPUTER PROGRAMS FOR UNDERWATER SOUND  
FIELDS DUE TO AIRBORNE SOURCES.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL NOTE,  
JAN 72 64P WATERS, JOHN F. ;  
REPT. NO. HRC-TN-144  
CONTRACT: N00014-70-C-0301

UNCLASSIFIED REPORT

DESCRIPTORS: (\*UNDERWATER SOUND, \*AIRCRAFT NOISE),  
(\*COMPUTER PROGRAMS, UNDERWATER SOUND), SOUND  
TRANSMISSION, INTERFACES, DATA PROCESSING, CURVE  
FITTING, GRAPHICS, NUMERICAL ANALYSIS  
IDENTIFIERS: AIR WATER INTERACTIONS, RAY TRACING,  
SOUND FIELDS

(U)

(U)

AN AIRCRAFT FLYING OVER WATER PRODUCES A  
SIGNIFICANT UNDERWATER SOUND FIELD IN THE WATER  
DIRECTLY BENEATH IT. ACOUSTIC RAY THEORY CAN BE  
USED TO OBTAIN A USEFUL APPROXIMATE DESCRIPTION OF  
THE UNDERWATER SOUND FIELD IN TERMS OF SOUND PRESSURE  
LEVELS. DETAILS OF THE THEORY ARE PRESENTED.  
COMPUTER PROGRAMS WHICH IMPLEMENT THE THEORY ARE  
DOCUMENTED. THE RESULTS INCLUDE TIME HISTORIES OF  
ACOUSTIC SIGNAL ANGLES OF ARRIVAL AT THE UNDERWATER  
RECEIVER; TIME HISTORIES OF SOUND PRESSURE LEVELS  
RECEIVED AT VARIOUS DEPTHS; AND EQUIPRESSURE CONTOUR  
DESCRIPTIONS OF THE UNDERWATER SOUND FIELD.  
(AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 893 426 20/1 1/3  
TENNESSEE UNIV SPACE INST TULLAHOMA

LOW SPEED AERODYNAMICS FOR ULTRA-QUIET  
FLIGHT.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JUL 70-MAY 71,  
MAR 72 169P KROEGER, RICHARD A. ; GRUSHKA,  
HEINZ D. ; HELVEY, TIBOR C. ;  
CONTRACT: F33615-70-C-1762  
PROJ: AF-1471  
TASK: 147102  
MONITOR: AFFDL TR-71-75

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, REDUCTION), (\*AERODYNAMIC  
NOISE, REDUCTION), AERODYNAMIC CHARACTERISTICS, FLIGHT,  
VORTEX GENERATORS, WINGS, POROUS MATERIALS, DESIGN,  
RECONNAISSANCE AIRCRAFT (U)  
IDENTIFIERS: O-3 AIRCRAFT, YO-3 AIRCRAFT (U)

A COMBINED AERODYNAMICS, ACOUSTICS AND BIONICS  
STUDY WAS CONDUCTED IN AN ATTEMPT TO DISCOVER NOVEL  
MECHANISMS TO REDUCE THE NOISE ASSOCIATED WITH  
AIRCRAFT FLIGHT. THE STRIGIFORMES ORDER OF BIRDS,  
SELECTED IN THE BIONICS EFFORT AS POSSESSING  
CHARACTERISTICS OF SILENT FLIGHT, WAS STUDIED  
EXTENSIVELY. THREE MECHANISMS PRODUCING THE  
POTENTIAL FOR ACOUSTIC QUIETING WERE DISCOVERED AS A  
RESULT OF THIS STUDY. THESE ARE: VORTEX SHEET  
GENERATORS, COMPLIANT SURFACES, AND DISTRIBUTED WING  
POROSITY. AN EXPERIMENTAL PROGRAM AIMED AT  
INITIATING FULL SCALE FLIGHT EVALUATION OF THESE  
CONCEPTS WAS OUTLINED. THE DETAILED RESULTS OF  
THESE STUDIES ARE INCLUDED. THE REPORT DEVELOPS  
DESIGN CONCEPTS WHICH MAY BE APPLIED TO OBTAIN ULTRA  
QUIET FLIGHT FOR CONVERT/RECONNAISSANCE/SURVEILLANCE  
AIRCRAFT SUCH AS THE YO-3. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 900 405 20/1 1/3 12/1 9/2  
WYLE LABS EL SEGUNDO CALIF

PREDICTION METHODS FOR NEAR FIELD NOISE  
ENVIRONMENTS OF VTOL AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FEB 69-OCT 71,  
MAY 72 244P SUTHERLAND, LOUIS C. ;BROWN,

DAVID ;

REPT. NO. WR-71-19

CONTRACT: F33615-69-C-1407

PROJ: AF-1471

TASK: 147102

MONITOR: AFFDL

TR-71-180

UNCLASSIFIED REPORT

DESCRIPTORS: (\*VERTICAL TAKEOFF AIRCRAFT, \*AIRCRAFT  
NOISE), (\*NOISE, MATHEMATICAL PREDICTION),  
(\*MATHEMATICAL MODELS, NOISE), AIRPLANE ENGINE NOISE,  
JET ENGINE NOISE, JET PLANE NOISE, PROPELLER NOISE,  
AERODYNAMIC NOISE, WHITE NOISE, SONIC BOOM, AIRCRAFT  
LANDINGS, TAKEOFF, FATIGUE(MECHANICS), AIRFRAMES,  
VIBRATION, GROUND EFFECT, SOUND TRANSMISSION,  
REFLECTIVITY, FREQUENCY, BUFFETING, ROTOR BLADES(ROTARY  
WINGS), REDUCTION, INTENSITY, ACOUSTIC PROPERTIES, GAS  
FLOW, SHOCK WAVES, TURBULENCE, VORTICES, GAS TURBINES,  
WALLS, FANS, JETS, POWER SPECTRA, AERODYNAMIC LOADING,  
LIFT, BLADE AIRFOILS, ANECHOIC CHAMBERS, COMPUTER  
PROGRAMS, JET AIRCRAFT, HELICOPTERS, BIBLIOGRAPHIES (U)  
IDENTIFIERS: J-57 ENGINES, J-57-P-21 ENGINES, NEAR  
FIELD NOISE, SOUND CONTOURS, STORED ROTORS (U)

THIS REPORT ESTABLISHES A CONSISTENT SET OF  
PREDICTION METHODS WHICH MAY BE USED TO ESTIMATE NEAR  
FIELD NOISE LEVELS FOR JET POWERED AND ROTOR/  
PROPELLER POWERED VTOL AIRCRAFT OPERATING IN CLOSE  
PROXIMITY TO THE GROUND. THE METHODS PROVIDED  
UTILIZE AVAILABLE THEORY AUGMENTED EXTENSIVELY BY  
EXPERIMENTAL DATA WHICH WAS AVAILABLE OR WAS OBTAINED  
DURING THE PROGRAM. THE NOISE PREDICTION METHODS  
PRESENTED WILL ALLOW AN ANALYSIS OF NEAR FIELD  
ENVIRONMENTS OF VTOL AIRCRAFT USING A SIMPLIFIED  
PROCEDURE SUITABLE FOR MANUAL CALCULATIONS. THE  
EXPERIMENTAL EFFORT CARRIED OUT IN THE PROGRAM  
CONSISTED OF NOISE MEASUREMENTS IN THE NEAR FIELD OF  
A MODEL PROPELLER AND A SUBSONIC JET IN A FREE AND  
VERTICAL CONFIGURATION. GROUND REFLECTION  
CORRECTION FACTORS FOR A SIMPLE SOURCE ARE TABULATED  
ALONG WITH THE COMPUTER PROGRAM LISTING.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 901 273 1/3 20/1  
KAMAN AEROSPACE CORP BLOOMFIELD CONN

TEST AND EVALUATION OF A QUIET HELICOPTER  
CONFIGURATION HH-43B. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 72 110P BOWES, MICHAEL A. ;  
REPT. NO. R-914  
CONTRACT: DAAJ02-70-C-0004, ARPA ORDER-1322  
MONITOR: USAAMRDL TR-71-31

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELICOPTERS, AERODYNAMIC CONFIGURATIONS),  
(\*AIRCRAFT NOISE, ATTENUATION), ACOUSTIC INSULATION,  
DAMPING, TESTS, CONTROL SYSTEMS, HELICOPTER ENGINES,  
HELICOPTER ROTORS, ROTOR BLADES (ROTARY WINGS), VELOCITY,  
DRIVES, VIBRATION, ENGINE AIR SYSTEMS COMPONENTS, FLIGHT  
TESTING, LEVEL FLIGHT, PERFORMANCE (ENGINEERING), DRIVE  
SHAFTS (U)  
IDENTIFIERS: AIRCRAFT MODIFICATIONS, \*HH-43B AIRCRAFT,  
H-43 AIRCRAFT, \*QUIET HELICOPTERS, AIRCRAFT, QUIET,  
ROTOR BLADE TIPS (U)

A SERIES OF NOISE CONTROL MODIFICATIONS WAS MADE TO  
THE HH-43B HELICOPTER. EACH MODIFICATION WAS  
EVALUATED BY DIRECT COMPARISON OF ACOUSTIC SIGNATURES  
OF MODIFIED AND UNMODIFIED CONFIGURATIONS. NOISE  
CONTROL MODIFICATIONS TO THE AIRCRAFT ENGINE, DRIVE  
AND ROTOR SYSTEMS WERE USED AND ARE EVALUATED.  
TESTING WAS PERFORMED ON TEN AIRCRAFT  
CONFIGURATIONS. THE NOISE CONTROL MODIFICATIONS  
RESULTED IN SUBSTANTIAL REDUCTIONS IN FLYOVER NOISE.  
ALL OCTAVE BANDS OF INTEREST, I.E., 63 HZ TO 4000  
HZ, WERE SIGNIFICANTLY REDUCED. THE ROTOR SYSTEM  
WAS THE DOMINANT NOISE SOURCE, IN LEVEL FLIGHT,  
DOMINATING EACH OCTAVE BAND IN THE MODIFIED  
AIRCRAFT'S AUDIBLE SPECTRUM, I.E., WITH CENTER  
FREQUENCIES FROM 31.5 HZ TO 8000 HZ. THIS NOISE  
SOURCE WAS REDUCED THROUGH CHANGES IN ROTOR BLADE  
GEOMETRY AND REDUCTION IN BLADE TIP SPEED. ALL  
PROGRAM NOISE SIGNATURE REDUCTION GOALS WERE MET OR  
EXCEEDED. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 902 828 20/1 5/10  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

PREDICTING AURAL DETECTABILITY OF AIRCRAFT IN  
NOISE BACKGROUNDS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. JAN-DEC 71,  
JUL 72 69P FIDELL, SANFORD A. ; PEARSONS,  
KARL S. ; BENNETT, RICARDA L. ;  
REPT. NO. BBN-2202  
CONTRACT: F33615-71-C-1220  
PROJ: AF-1471  
TASK: 147102  
MONITOR: AFFDL TR-72-16

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, \*AUDITORY PERCEPTION),  
PSYCHOACOUSTICS, DETECTION, OBSERVATION AIRCRAFT,  
RECONNAISSANCE AIRCRAFT, BACKGROUND, MASKING, ATTENTION,  
AUDITORY ACUITY, THRESHOLDS (PHYSIOLOGY), HEARING,  
JUNGLES, AIRPLANE ENGINE NOISE, SIGNAL-TO-NOISE RATIO,  
SENSITIVITY, PERFORMANCE (HUMAN), ACCURACY, AUDITORY  
SIGNALS, FACTOR ANALYSIS, DATA, TEST METHODS, TEST  
EQUIPMENT (U)  
IDENTIFIERS: ACOUSTIC DETECTION, AUDITORY THRESHOLDS,  
JUDGMENT, AIRCRAFT, QUIET (U)

LABORATORY EXPERIMENTS WERE UNDERTAKEN TO DEVELOP  
IMPROVED AURAL DETECTION CRITERIA FOR LIGHT AIRCRAFT.  
SPECIFICALLY TWO SERIES OF PSYCHOACOUSTIC JUDGMENT  
TESTS WERE CONDUCTED TO DETERMINE THE APPLICABILITY  
OF THE PSYCHOPHYSICAL THEORY OF SIGNAL  
DETECTABILITY (TSD) TO PREDICTION OF THE AURAL  
DETECTABILITY OF LIGHT AIRCRAFT NOISE SIGNATURES IN  
JUNGLE NOISE BACKGROUNDS. THE FIRST SERIES OF TESTS  
PRODUCED DATA SUPPORTING DEVELOPMENT OF A SIMPLIFIED  
GRAPHICAL PREDICTION METHOD BASED ON TSD. THE  
SECOND TESTING PROGRAM VALIDATED THE PRECISION AND  
ACCURACY OF THE PREDICTION METHOD UNDER QUASI-  
REALISTIC LISTENING CONDITIONS. PREDICTED LEVELS OF  
PERFORMANCE WERE TYPICALLY WITHIN ONE OR TWO DB OF  
THE DATA AVERAGED FOR ALL OBSERVERS. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 907 108 20/1 1/3  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

SUPERSONIC TRANSPORT NOISE REDUCTION  
TECHNOLOGY SUMMARY. PHASE I.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 72 529P FISK, W. S. ; HEHMANN, H.  
W. ; KNOTT, P. R. ; SANDUSKY, G. T. ;  
REPT. NO. R72AEG343  
CONTRACT: FA-SS-71-13  
MONITOR: FAA-SS 72-43

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-907 110L.

DESCRIPTORS: (\*JET ENGINE NOISE, \*SUPPRESSORS), (\*JET  
TRANSPORT PLANES, SUPERSONIC AIRCRAFT), REDUCTION,  
TURBOJET ENGINES, MODEL TESTS, TURBOJET EXHAUST NOZZLES,  
POWER SPECTRA, TURBULENCE, DUCTS, COMPRESSOR NOISE,  
ANNULAR NOZZLES, PLUG NOZZLES, CONICAL NOZZLES,  
FREQUENCY, BROADBAND, VELOCITY, AERODYNAMIC  
CONFIGURATIONS, NOZZLE INSERTS, HEAT RESISTANT  
MATERIALS, HIGH TEMPERATURE, ANGLE OF ATTACK, INTENSITY,  
DAMPING, CERMETS, CERAMIC MATERIALS, ABSORPTION (U)  
IDENTIFIERS: CERVIT MATERIAL NO.2, CERVIT MATERIAL  
NO.1, CHUTED PLUG NOZZLES, COMPRESSOR TIPS, \*GE-4  
ENGINES, GREAT REX NOZZLES, HOLE SIZE, J-85 ENGINES,  
MONOBLOCK MATERIAL, \*NOISE REDUCTION, SDOF MATERIAL  
NO.19, SDOF MATERIAL NO.18, SPOKE NOZZLES, \*SUPERSONIC  
TRANSPORTS, TAPERED SP (U)

STUDIES WERE PERFORMED TO CONCLUDE AND REFINE  
ELEMENTS OF WORK BEGUN UNDER THE SUPERSONIC  
TRANSPORT ENGINE DEVELOPMENT PROGRAM. THREE  
PROGRAMS WERE COMPLETED IN THE AREA OF TURBOMACHINERY  
NOISE: THE SCREENING OF PROPOSED MATERIALS FOR  
HIGH TEMPERATURE ACOUSTIC TREATMENT AND THE EXTENSION  
OF SUPPRESSION DESIGN METHODS TO THE FLOWS AND  
TEMPERATURES TYPICAL OF TURBINE EXHAUST CONDITIONS;  
INVESTIGATIONS OF MULTI-STAGE COMPRESSOR TIP  
TREATMENT USING MULTIPLE CIRCUMFERENTIAL GROOVES; AND  
THE PREDICTION AND DEMONSTRATION OF THE EFFECTS OF  
INCREASED TURBINE AXIAL SPACING ON NOISE GENERATION.  
DETAILED ANALYTICAL STUDIES WERE MADE OF DATA FROM  
CONIC AND SUPPRESSOR-TYPE JETS, BOTH COLD AND HOT  
FLOWS, SELECTED FROM THE GE4/SST PROGRAM.  
CORRELATIONS OF AERO/ACOUSTIC INTERRELATIONSHIPS  
WERE MADE,

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ZOM09

AD-A046 800

DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA  
ENVIRONMENTAL POLLUTION: NOISE POLLUTION-AIRPLANE NOISE.(U)  
NOV 77

F/6 5/2

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DDC/BIB-77/11

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AD  
A046 800



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 907 109 20/1 1/3  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

SUPERSONIC TRANSPORT NOISE REDUCTION  
TECHNOLOGY SUMMARY. PHASE I. SUMMARY OF  
GE4/SST ACOUSTIC SUPPRESSION RESEARCH.  
VOLUME 1.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 72 786P BRAUSCH, J. F. ; DOYLE, V.  
L. ;  
REPT. NO. R72AEG342-VOL-1  
CONTRACT: FA-SS-71-13  
MONITOR: FAA-SS 72-42-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-907  
110L.

DESCRIPTORS: (\*JET ENGINE NOISE, \*SUPPRESSORS), (\*JET  
TRANSPORT PLANES, SUPERSONIC AIRCRAFT), REDUCTION,  
TURBOJET ENGINES, MODEL TESTS, AFTERBURNERS,  
AFTERBURNING, TEST FACILITIES, EXPERIMENTAL DATA, DATA  
PROCESSING, WATER INJECTION, AIR, INJECTION,  
FLAPS (CONTROL SURFACES), VELOCITY, SECONDARY FLOW, HIGH  
TEMPERATURE, POWER SPECTRA, TURBOJET EXHAUST NOZZLES,  
PLUG NOZZLES, ANNULAR NOZZLES, CONICAL NOZZLES, THRUST  
REVERSAL, INTENSITY, PRESSURE (U)  
IDENTIFIERS: \*GE-4 ENGINES, GREATER NOZZLES, SHROUDED  
NOZZLES, SPOKE NOZZLES, \*SUPERSONIC TRANSPORTS, VENTED  
CHUTE NOZZLES (U)

A DEVELOPMENT PROGRAM FOR A COMMERCIAL SUPERSONIC  
AIRCRAFT AND ENGINES WAS SPONSORED BY THE FEDERAL  
AVIATION ADMINISTRATION DURING A FIVE-YEAR PERIOD  
FROM 1966 THROUGH 1971. THE UNIQUE PROPULSION  
SYSTEM, AN AFTERBURNING TURBOJET, REQUIRED ACOUSTIC  
SUPPRESSION TECHNIQUES TO REDUCE ITS NOISE LEVELS TO  
THOSE FEDERALLY REGULATED FOR SUBSONIC AIRCRAFT. AN  
ACOUSTIC SUPPRESSION RESEARCH PROGRAM WAS CONDUCTED  
BY THE GENERAL ELECTRIC COMPANY TO DEVELOP  
TECHNOLOGY APPLICABLE TO PROTOTYPE AND COMMERCIAL  
SUPERSONIC ENGINES. PRIMARY EMPHASIS WAS ON JET  
NOISE SUPPRESSOR DEVELOPMENT THROUGH MODEL AND ENGINE  
TESTING. VARIOUS SYSTEMS WERE STUDIED INCLUDING  
EJECTOR PUMPING, SIMPLE MECHANICAL PRIMARY AND  
SECONDARY SUPPRESSORS, FLUID INJECTANTS, MULTI-  
ELEMENT TUBE NOZZLES, ACOUSTICALLY TREATED EJECTORS,  
HIGHLY SEGMENTED ANNULAR PLUG NOZZLES, ETC.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 907 110 20/1 1/3  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

SUPERSONIC TRANSPORT NOISE REDUCTION  
TECHNOLOGY SUMMARY. PHASE I. SUMMARY OF  
GE4/SST ACOUSTIC SUPPRESSION RESEARCH.  
VOLUME 2. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 72 481P BRAUSCH, J. F. ; DOYLE, V.  
L. ;  
REPT. NO. R72AEG342-VOL-2  
CONTRACT: FA-SS-71-13  
MONITOR: FAA-SS 72-42-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-907 109L  
AND ALSO AD-907 108L.

DESCRIPTORS: (\*JET ENGINE NOISE, \*SUPPRESSORS), (\*JET  
TRANSPORT PLANES, SUPERSONIC AIRCRAFT), REDUCTION,  
TURBOJET ENGINES, MODEL TESTS, PRESSURE, COMPRESSOR  
NOISE, VELOCITY, TURBOJET EXHAUST NOZZLES, CONICAL  
NOZZLES, NOZZLE INSERTS, PLUG NOZZLES, ANNULAR NOZZLES,  
FLAPS (CONTROL SURFACES), JET ENGINE INLETS, POWER  
SPECTRA, SHROUD RINGS, AERODYNAMIC CONFIGURATIONS, RODS,  
PIPES, SECONDARY INJECTION (U)

IDENTIFIERS: CONVERGENT NOZZLES, \*GE-4 ENGINES,  
GREATREX NOZZLES, J-79 ENGINES, NOZZLE LINERS,  
PARALLEL FLOW NOZZLES, SPOKE NOZZLES, \*SUPERSONIC  
TRANSPORTS (U)

CONTENTS: JET NOISE SUPPRESSOR  
CONFIGURATIONS AND PARAMETRIC STUDIES  
(CONCLUDED) -- ACOUSTIC EJECTORS ON TUBE AND  
CONICAL NOZZLES, AND ANNULAR PLUG NOZZLE SUPPRESSOR  
MODEL STUDIES; SYSTEM STUDIES -- CHOKED INLET -  
GE4 ENGINE, EXHAUST NOZZLE OPEN AREA SCHEDULE -  
GE4 ENGINE, AND TUBOMACHINERY NOISE ON GE4  
ENGINE; GENERAL ELECTRIC CORPORATE RESEARCH  
AND DEVELOPMENT CENTER'S FUNDAMENTAL JET  
NOISE WORK -- SUPERSONIC JET NOISE SUPPRESSION  
RESULTS AND PREDICTION METHODS. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD- 917 355 17/1 20/1  
BOEING VERTOL CO PHILADELPHIA PA

AN EXPERIMENT IN AURAL DETECTION OF  
HELICOPTERS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 73 121P HARTMAN, L. ; STERNFELD, H. ;  
CONTRACT: DAAJ02-71-C-0065  
PROJ: DA-1-F-162205-AA-52  
TASK: 1-F-162205-AA-5202  
MONITOR: USAAMRDL TR-73-50

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELICOPTERS, ACOUSTIC DETECTION),  
(\*AIRCRAFT NOISE, AUDITORY PERCEPTION), TAIL  
HELICOPTER ROTORS, HELICOPTER ROTORS,  
RANGE(DISTANCE), HEARING, BACKGROUND,  
AMBIENT NOISE, NOISE(SOUND), LOW FREQUENCY,  
PREDICTIONS, POSITION(LOCATION), MICROPHONES,  
ACOUSTIC DETECTORS, OBSERVATION, ATMOSPHERES,  
ATTENUATION, ACOUSTICS, ACOUSTIC SURVEILLANCE  
IDENTIFIERS: AURAL DETECTION, HELICOPTER NOISE,  
H-58 AIRCRAFT, ATMOSPHERIC ATTENUATION

(U)

(U)

THE REPORT DESCRIBES A FIELD EXPERIMENT USED TO  
EVALUATE A THEORETICAL METHOD OF DETERMINING  
HELICOPTER AURAL DETECTION DISTANCE. A TEST PROGRAM  
WAS CONDUCTED USING A LIGHT COMMERCIAL HELICOPTER,  
TEST OBSERVERS, AND SUPPORTING ACOUSTIC MONITORING  
EQUIPMENT. VARIOUS BACKGROUND AMBIENT NOISE  
CONDITIONS WERE USED AT THE OBSERVER LOCATION. DATA  
WAS REDUCED, DETECTION DISTANCES WERE OBTAINED, AND  
COMPARISONS WERE MADE WITH THEORETICALLY PREDICTED  
DETECTION DISTANCES. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A001 329 20/1 21/5 1/3  
AIR FORCE FLIGHT DYNAMICS LAB WRIGHT-PATTERSON AFB  
OHIO

NEAR FIELD NOISE PREDICTION FOR A LINEAR  
ARRAY OF TURBOJET ENGINES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

JUL 74 77P SMITH, D. L. ; PAXSON, R.  
P. ; TALMADGE, R. D. ; PLZAK, G. A. ;  
REPT. NO. AFFDL-TM-74-139-FYA  
PROJ: AF-1471  
TASK: 147102

UNCLASSIFIED REPORT

DESCRIPTORS: \*TURBOJET ENGINES, \*JET ENGINE NOISE,  
NEAR FIELD, NOISE(SOUND), PREDICTIONS,  
ACOUSTIC FIELDS, ACOUSTIC MEASUREMENT

(U)

A COMPUTER PROGRAM IS PRESENTED FOR CALCULATING THE  
SOUND PRESSURE LEVEL (SPL) IN THE JET NEAR FIELD  
WHICH ACCOUNTS FOR GROUND REFLECTION AND MULTIPLE  
ENGINE OPERATION. THE PREDICTION METHOD IS A  
MODIFICATION OF THE SEMI-EMPIRICAL TECHNIQUE  
PRESENTED IN AFFDL TR-67-43 'NEAR FIELD  
NOISE ANALYSIS OF AIRCRAFT PROPULSION  
SYSTEMS WITH EMPHASIS ON PREDICTION TECHNIQUES  
FOR JETS'. THE MODIFICATIONS IN ADDITION TO  
ACCOUNTING FOR GROUND REFLECTION ALLOW THE PREDICTION  
OF THE SPL FOR THE OVERALL AND THREE OCTAVE BANDS  
AT ANY POINT IN THE FIELD AND REQUIRE DATA INPUTS OF  
JET EXIT TEMPERATURE, MACH NUMBER AND DIAMETER.  
A BRIEF DESCRIPTION IS PRESENTED OF A NOISE  
MEASUREMENT PROGRAM CONDUCTED ON THE XB-70 AIRCRAFT  
DURING WHICH ONE-THIRD OCTAVE BAND NOISE SPECTRA WERE  
OBTAINED FOR A RANGE OF ENGINE CONDITIONS AND FOR  
VARIOUS COMBINATIONS OF LINEAR ARRAYS OF  
ENGINES.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A001 737 21/5 20/1  
GENERAL MOTORS CORP INDIANAPOLIS IND DETROIT DIESEL  
ALLISON DIV

INVESTIGATION OF AIRCRAFT COMBUSTOR  
NOISE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 73-APR 74,  
SEP 74 413P SEMRAU, W. R. ; FRYE, D. E.  
, JR;  
REPT. NO. DDA-EDR-8225  
CONTRACT: DAAJ02-73-C-0088  
PROJ: DA-1-G-172207-AA-110  
MONITOR: USAAMRDL TR-74-73

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: \*AIRCRAFT ENGINE NOISE, \*COMBUSTORS,  
JET ENGINE NOISE, COMBUSTION, NOISE POLLUTION,  
NOISE REDUCTION, CORRELATION TECHNIQUES,  
REGRESSION ANALYSIS

(U)

IDENTIFIERS: \*COMBUSTION NOISE, T-63 ENGINES, T-  
63-A-5A ENGINES, ENGINEERING DESIGN

(U)

CURRENT COMBUSTOR DESIGN TECHNOLOGY DEPENDS  
PRIMARILY UPON EMPIRICAL CORRELATION AND PAST  
EXPERIMENTAL EXPERIENCE OF THE DESIGNERS. THERE IS  
A CONTINUING NEED FOR KNOWLEDGE OF THE COMBUSTION  
PROCESS AND HOW THE DIFFERENT DESIGN AND PERFORMANCE  
PARAMETERS ARE RELATED. THE OBJECTIVE OF THIS  
PROGRAM WAS TO INVESTIGATE THE FEASIBILITY OF  
MEASURING COMBUSTOR NOISE AND THEN RELATING THE NOISE  
LEVELS BY CORRELATION CURVES TO OTHER PERTINENT  
PERFORMANCE PARAMETERS, SUCH AS COMBUSTOR EFFICIENCY,  
AND MASS EMISSIONS.

(U)

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO.    ZOM09

AD-A003 086                    21/5  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

BYPASS TURBOJET ENGINE NOISE  
CHARACTERISTICS ON THE TEST STAND,                    (U)

NOV 74            36P            EENENKOV, V. G. ;  
REPT. NO.    FTD-HC-23-862-74

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:    EDITED TRANS. OF RIZHSKII INSTITUT  
INZHENEROV GRADZHANSKOI AVIATSII. TRUDY (USSR)  
N174 P3-4, 100-134 1971.

DESCRIPTORS:    \*TURBOJET ENGINES, \*JET ENGINE NOISE,  
NOISE REDUCTION, ACOUSTIC FIELDS, BYPASS ENGINES,  
TEST STANDS, TRANSLATIONS, USSR                    (U)  
IDENTIFIERS:    NOISE EXPOSURE                    (U)

THE REPORT EXAMINES THE ACOUSTIC CHARACTERISTICS OF  
THE PRIMARY NOISE SOURCES OF BTJE OPERATING ON THE  
TEST STAND. THE ACOUSTIC CHARACTERISTIC CONCEPTS  
ARE DISCUSSED AND METHODS FOR COMPUTATIONAL  
DETERMINATION OF THESE CHARACTERISTICS ARE GIVEN.  
INFORMATION IS PRESENTED ON THE NOISE EXCITATION  
MECHANISMS. THE DATA OF EXPERIMENTAL STUDIES OF  
THE NOISE OF BTJE WITH BYPASS RATIO  $\gamma = 0 - 6$  ARE  
ANALYZED.                    (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A004 818 20/1 13/2  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

COMMUNITY NOISE EXPOSURE RESULTING FROM  
AIRCRAFT OPERATIONS: APPLICATION GUIDE FOR  
PREDICTIVE PROCEDURE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
NOV 74 111P BISHOP, DWIGHT E. ;  
REPT. NO. BBN-2582  
CONTRACT: F33615-73-C-4160  
MONITOR: AMRL TR-73-105

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*URBAN AREAS, \*URBAN  
PLANNING, \*NOISE POLLUTION, AIRPORTS, LAND USE,  
AIRCRAFT ENGINE NOISE, FLIGHT PATHS, NOISE  
REDUCTION (U)  
IDENTIFIERS: \*NOISE EXPOSURE, \*NOISE EXPOSURE  
FORECASTS (U)

THIS REPORT IS ONE OF A SERIES DESCRIBING THE  
RESEARCH PROGRAM UNDERTAKEN BY THE AEROSPACE  
MEDICAL RESEARCH LABORATORY TO DEVELOP  
PROCEDURES FOR PREDICTING THE COMMUNITY NOISE  
EXPOSURE RESULTING FROM AIRCRAFT OPERATIONS. IT  
DISCUSSES THE APPLICATIONS OF THE PROCEDURE TO THE  
AIRCRAFT NOISE-RELATED PROBLEMS FACING MASTER  
PLANNERS, CIVIL ENGINEERS, ENVIRONMENTALISTS, ETC.,  
AS WELL AS THE MANAGEMENT PEOPLE CONCERNED WITH  
OPERATING AN AIR BASE. EXAMPLES ARE GIVEN OF USE OF  
THE PROCEDURE IN TERMS FOR LAND PLANNING, OPERATIONAL  
APPLICATIONS AT AIR BASES AND BASIC AIRCRAFT DESIGN. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A004 821 20/1 13/2  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

COMMUNITY NOISE EXPOSURE RESULTING FROM  
AIRCRAFT OPERATIONS: COMPUTER PROGRAM  
DESCRIPTION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
NOV 74 118P HORONJEFF, RICHARD D. ;  
KANDUKURI, RAO R. ; REDDINGIUS, NICOLAAS H. ;  
REPT. NO. BBN-2585  
CONTRACT: F33615-73-C-4160  
PROJ: AF-7231  
TASK: 723104  
MONITOR: AMRL TR-73-109

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*URBAN AREAS, \*URBAN  
PLANNING, \*NOISE POLLUTION, AIRPORTS, LAND USE,  
DIURNAL VARIATIONS, COMPUTER PROGRAMMING, AIRCRAFT  
ENGINE NOISE, FLIGHT PATHS  
IDENTIFIERS: NEFUSAF COMPUTER PROGRAM, GPCP  
COMPUTER PROGRAM

(U)

(U)

THIS REPORT DESCRIBES A COMPUTER PROGRAM TO  
CALCULATE COMMUNITY NOISE EXPOSURE AS DETERMINED BY  
THE NOISE EXPOSURE FORECAST (NEF)  
METHODOLOGY. STUDIES BY THE UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY HAVE MEANWHILE  
LED TO THE SPECIFICATION OF ANOTHER COMMUNITY NOISE  
EXPOSURE MEASURE: THE DAY/NIGHT AVERAGE  
LEVEL (DNL). SINCE THE TWO TYPES OF  
DESCRIPTORS ARE ESSENTIALLY SIMILAR, THE COMPUTER  
PROGRAM MAY BE ADAPTED TO THIS NEW UNIT WHEN THE NEED  
ARISES WITHOUT THE NEED TO REDEVELOP THE  
COMPUTATIONAL ALGORITHMS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A006 779 20/4 1/1 20/1  
CORNELL UNIV ITHACA N Y

BROADBAND AND DISCRETE FREQUENCY RADIATION  
FROM SUBSONIC ROTORS,

(U)

JAN 74 29P HOMICZ, G. F. ; GEORGE, A.

R. ;

CONTRACT: DAHC04-70-C-0057, DAHC04-74-C-0001

MONITOR: ARO 9372.4-E

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN JNL. OF SOUND AND  
VIBRATION, V36 N12 P151-177 1974.

DESCRIPTORS: \*AIRCRAFT NOISE, \*ROTARY WINGS,  
\*AERODYNAMIC NOISE, HOVERING, TURBULENT FLOW,  
SPECTRUM ANALYSIS, NOISE GENERATORS, DIPOLES,  
REPRINTS

(U)

A UNIFIED ANALYTICAL TECHNIQUE IS PRESENTED FOR THE PREDICTION OF BOTH THE DISCRETE FREQUENCY AND BROADBAND ACOUSTIC SIGNATURES GENERATED BY AERODYNAMIC ROTORS. WHILE PRESENT APPLICATIONS DEAL WITH DIPOLE (FORCE) TYPE RADIATION FROM CIRCULARLY SHAPED SOURCE REGIONS, THE APPROACH IS FORMALLY APPLICABLE TO OTHER ORDER MULTIPOLES AND ARBITRARILY SHAPED SOURCE DISTRIBUTIONS. THE PREDICTION OF BROADBAND RADIATION FROM A HOVERING ROTOR DUE TO INFLOW TURBULENCE/BLADE INTERACTION HAS BEEN ANALYZED BY USING THIS APPROACH. BY WORKING IN CO-ORDINATES FIXED WITH RESPECT TO THE OBSERVER RATHER THAN THE BLADES, THE APPROPRIATE BLADE-TO-BLADE LOAD CORRELATIONS CAN BE HANDLED CORRECTLY. A DIRECT RELATIONSHIP BETWEEN THE ACOUSTIC AND TURBULENCE SPECTRA RESULTS. THE MOST IMPORTANT PARAMETER AFFECTING THE SHAPE AND MAGNITUDE OF THE ACOUSTIC SPECTRUM IS SHOWN TO BE THE RATIO OF THE TIME TAKEN BY THE ROTOR TO COMPLETE ONE REVOLUTION TO THE TIME NEEDED TO CONVECT ONE INTEGRAL SCALE OF TURBULENCE THROUGH THE ROTOR FACE. THE RESULT INDICATES NO DIRECT DEPENDENCE OF BROADBAND NOISE ON STEADY THRUST LEVEL, EXCEPT THROUGH WHATEVER INFLUENCE IT MAY HAVE ON THE MEAN VELOCITY THROUGH THE ROTOR FACE. THE METHOD IS APPLIED FIRST TO A SIMPLIFIED POINT DIPOLE, QUASI-STEADY AERODYNAMIC BLADE MODEL FOR A B-BLADED ROTOR, PROVIDING A CONVENIENT UPPER BOUND ESTIMATE TO THE NOISE ONE CAN EXPECT IN A GIVEN SITUATION. THE PRINCIPAL EFFECTS OF COMPRESSIBLE UNSTEADY AERODYNAMICS AND OF DISTRIBUTED LOADING ARE ANALYZED AND SHOWN TO RESULT IN REDUCTIONS IN HIGH FREQUENCY RADIATION.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A009 644 20/1 21/5  
CALIFORNIA INST OF TECH PASADENA KARMAN LAB OF FLUID  
MECHANICS AND JET PROPULSION

ACOUSTIC ATTENUATION BY VAPORIZATION OF  
LIQUID DROPLETS -- APPLICATION TO NOISE  
REDUCTION IN AIRCRAFT POWERPLANTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 MAR 71-30 NOV 74,  
FEB 75 57P MARBLE, FRANK E. ;  
CONTRACT: AF-AFOSR-2068-71  
PROJ: AF-9781  
TASK: 978102  
MONITOR: AFOSR TR-75-0511

UNCLASSIFIED REPORT

DESCRIPTORS: \*JET ENGINE NOISE, \*ACOUSTIC  
ATTENUATION, \*WATER INJECTION, ACOUSTIC EMISSIONS,  
NOISE REDUCTION, DROPS, PLANE WAVES, DUCTS  
IDENTIFIERS: \*PHASE EXCHANGE ATTENUATION

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A CLOUD OF SMALL WATER DROPLETS IN SATURATED AIR  
ATTENUATES ACOUSTIC DISTURBANCES BY VISCOUS DRAG,  
HEAT TRANSFER, AND VAPOR EXCHANGE WITH THE AMBIENT  
GAS. THE MECHANISMS OF THESE PROCESSES ARE  
ANALYZED TO SHOW THAT THE VISCOUS AND HEAT TRANSFER  
PHENOMENA ATTENUATE AT FREQUENCIES ABOVE THE  
RECIPROCAL OF THE STOKES RELAXATION TIME, A  
FREQUENCY OF ABOUT 10,000 HZ FOR 1-MICRON DROPLETS.  
THE PROCESSES ASSOCIATED WITH PHASE EXCHANGE  
ATTENUATE AT MUCH LOWER FREQUENCIES; IN FACT, THE  
CHARACTERISTIC FREQUENCY OF THIS ATTENUATION MAY BE  
CONTROLLED BY CHOICE OF THE LIQUID MASS FRACTION.  
THE STRENGTH OF THE PHASE EXCHANGE ATTENUATION IS,  
HOWEVER, PROPORTIONAL TO THE MASS OF WATER VAPOR IN  
THE AIR, A FACTOR CONTROLLED BY AIR TEMPERATURE.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A010 037 20/1 1/3  
ENVIRONMENTAL HEALTH LAB MCCLELLAN AFB CALIF

NOISE SURVEY FOR ADDITION OF T-37 AIRCRAFT  
AT MATHER AFB, CALIFORNIA.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

JUN 74 19P BURNETT, RONALD D. ; SWEIGART,  
MARLIN L. ; GUY, HARRY P. ;  
REPT. NO. EHL-M-74M-9  
PROJ: EHL-M-NBF-348

UNCLASSIFIED REPORT

DESCRIPTORS: \*JET TRAINING PLANES, \*JET ENGINE  
NOISE, LANDING FIELDS, ACOUSTIC MEASUREMENT, NOISE  
POLLUTION, TAXIING, FLYBY, CALIFORNIA

(U)

IDENTIFIERS: T-37 AIRCRAFT, \*NOISE LEVELS,  
MATHER AIR FORCE BASE

(U)

NOISE LEVELS GENERATED BY T-37 AIRCRAFT WERE  
MEASURED AT MATHER AFB CA WHILE SIMULATING  
VARIOUS GROUND OPERATIONS AND DURING A FLYOVER.  
THESE DATA WERE COLLECTED TO ASSIST IN THE  
EVALUATION OF THE IMPACT OF A PROPOSED T-37 MISSION  
ON BASE ACTIVITIES. NOISE WAS RECORDED INSIDE AND  
OUTSIDE SELECTED BUILDINGS ON BASE WHICH WERE THOUGHT  
TO BE AFFECTED BY THESE OPERATIONS. MAXIMUM LEVELS  
ENCOUNTERED AT EACH BUILDING ARE PRESENTED.  
MEASURED NOISE LEVELS INDICATE LITTLE OR NO IMPACT  
ON BASE ACTIVITIES FROM NOISE GENERATED DURING  
OPERATION OF T-37 AIRCRAFT. WHERE APPROPRIATE,  
RECOMMENDATIONS FOR MINIMIZING NOISE AND SUGGESTIONS  
FOR ADDITIONAL EVALUATIONS ARE MADE.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A012 090 20/1 1/3  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)

AIRCRAFT NOISE GENERATION, EMISSION AND  
REDUCTION.

(U)

DESCRIPTIVE NOTE: LECTURE SERIES.

JUN 75 187P

REPT. NO. AGARD-LS-77

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED IN BELGIUM 16-17 JUN 75,  
WEST GERMANY 19-20 JUN 75, AND IN THE UNITED  
KINGDOM 23-24 JUN 75. NATO FURNISHED.

DESCRIPTORS: \*JET AIRCRAFT, \*AIRCRAFT NOISE, JET  
ENGINE NOISE, PROPELLER NOISE, SONIC BOOM, NOISE  
REDUCTION, PHYSIOLOGICAL EFFECTS, LEGISLATION,  
NATO

(U)

IDENTIFIERS: \*NOISE SOURCES, \*NOISE ABATEMENT

(U)

THE PHYSICAL PROPERTIES OF AIRCRAFT NOISE ARE  
SUMMARIZED, WITH SPECIAL EMPHASIS ON JET NOISE AND  
FAN-COMPRESSOR-PROPELLER-ROTOR NOISE. TOPICS  
INCLUDE ACOUSTIC FUNDAMENTALS, NOISE SOURCE  
CHARACTERISTICS AND INTERACTIONS, ATMOSPHERIC  
PROPAGATION, AIRFRAME NOISE, SONIC BOOM, DUCT LINER  
AND MUFFLER THEORY. DURING THE SERIES, RESEARCH  
AND TECHNOLOGY ACTIVITIES RELATED TO JET ENGINE NOISE  
AND ITS CONTROL ARE DISCUSSED, AND THE IMPACT OF THIS  
NOISE ON PEOPLE AND COMMUNITIES AND AIRCRAFT  
OPERATIONAL PROCEDURES FOR NOISE MINIMISATION ARE  
ALSO REVIEWED.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 371 1/3 20/1  
LOCKHEED-CALIFORNIA CO BURBANK

COMMERCIAL AIRCRAFT NOISE DEFINITION -  
L1011 TRISTAR. VOLUME I.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 73-SEP 74,  
SEP 74 85P SHAPIRO, NATHAN ;  
REPT. NO. LR-26075-VOL-1  
CONTRACT: DOT-FA73WA-3300  
MONITOR: FAA-EQ 73-6-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A012  
372.

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*JET TRANSPORT  
PLANES, \*JET PLANE NOISE, AIRCRAFT NOISE, JET  
ENGINE NOISE, NOISE POLLUTION, ACOUSTIC SIGNATURES,  
ACOUSTIC ATTENUATION, TAKEOFF, AIRCRAFT LANDINGS,  
COMPUTER PROGRAMMING, AERODYNAMIC NOISE  
IDENTIFIERS: L-1011 AIRCRAFT, \*NOISE LEVELS,  
DOT/4DZ/AA, DOT/5B

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(U)

CALCULATION PROCEDURES TO DESCRIBE AIRPLANE NOISE  
DURING TAKEOFF AND APPROACH HAVE BEEN PROGRAMMED FOR  
BATCH OPERATION ON A LARGE DIGITAL COMPUTER. THREE  
ROUTINES ARE INCLUDED. THE FIRST NORMALIZES FAR-  
FIELD NOISE SPECTRA TO REFERENCE CONDITIONS AND THEN  
DETERMINES SPECTRA AT VARIOUS DISTANCES FROM THE  
AIRPLANE, FOR AIRPORT ELEVATIONS BETWEEN SEA LEVEL  
AND 6000 FEET AND AMBIENT TEMPERATURES BETWEEN 30F  
AND 100F. OVERALL SOUND PRESSURE LEVELS, A-  
WEIGHTED NOISE LEVELS, PERCEIVED NOISE LEVELS, AND  
EFFECTIVE PERCEIVED NOISE LEVELS ARE CALCULATED.  
THE SECOND ROUTINE USES AERODYNAMIC AND ENGINE  
THRUST DATA TO PRODUCE TAKEOFF AND APPROACH FLIGHT  
PATH DESCRIPTION. THE BASIC TAKEOFF IS AT  
EQUIVALENT AIRSPEED, WITH THRUST REDUCTION OR  
ACCELERATION OPTION AFTER GEAR-UP. THE APPROACH IS  
ALONG ANY CONSTANT GLIDE SLOPE BETWEEN 3 AND 6  
DEGREES AT CONSTANT AIRSPEED, WITH A TWO-SEGMENT  
OPTION. THE LAST ROUTINE COMBINES NOISE  
PROPAGATION AND FLIGHT PATH INFORMATION TO PRODUCE  
CONSTANT NOISE CONTOUR FOOTPRINTS. THE PROGRAM HAS  
BEEN EXERCISED ON LOCKHEED L-1011-1 TRISTAR/  
ROLLS-ROYCE RB.211-22 DATA, PROVIDING RESULTS  
IN EPNOB AND DBA.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 372 1/3 20/1  
LOCKHEED-CALIFORNIA CO BURBANK

COMMERCIAL AIRCRAFT NOISE DEFINITION - L-  
1011 TRISTAR. VOLUME II-L-1011-1 DATA.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 73-SEP 74,  
SEP 74 302P SHAPIRO, NATHAN ;  
REPT. NO. LR-26075-VOL-2  
CONTRACT: DOT-FA73WA-3300  
MONITOR: FAA-EQ 73-6-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A012 371  
AND VOLUME 3, AD-A012 373.

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*JET TRANSPORT  
PLANES, \*JET PLANE NOISE, AIRCRAFT NOISE, JET  
ENGINE NOISE, AERODYNAMIC NOISE, NOISE POLLUTION,  
ACOUSTIC SIGNATURES, ACOUSTIC ATTENUATION,  
TAKEOFF, AIRCRAFT LANDINGS, STATISTICAL DATA  
IDENTIFIERS: L-1011 AIRCRAFT, \*NOISE LEVELS,  
DOT/4DZ/DA, DOT/5B

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(U)

CALCULATION PROCEDURES TO DESCRIBE AIRPLANE NOISE  
DURING TAKEOFF AND APPROACH HAVE BEEN PROGRAMMED FOR  
BATCH OPERATION ON A LARGE DIGITAL COMPUTER. THREE  
ROUTINES ARE INCLUDED. THE FIRST NORMALIZES FAR-  
FIELD NOISE SPECTRA TO REFERENCE CONDITIONS AND THEN  
DETERMINES SPECTRA AT VARIOUS DISTANCES FROM THE  
AIRPLANE, FOR AIRPORT ELEVATIONS BETWEEN SEA LEVEL  
AND 6000 FEET AND AMBIENT TEMPERATURES BETWEEN 30F  
AND 100F. OVERALL SOUND PRESSURE LEVELS, A-  
WEIGHTED NOISE LEVELS, PERCEIVED NOISE LEVELS, AND  
EFFECTIVE PERCEIVED NOISE LEVELS ARE CALCULATED.  
THE SECOND ROUTINE USES AERODYNAMIC AND ENGINE  
THRUST DATA TO PRODUCE TAKEOFF AND APPROACH FLIGHT  
PATH DESCRIPTION. VOLUME 2 INCLUDES L-1011-1  
NOISE PROPAGATION AND AIRPLANE PERFORMANCE AND  
SAMPLES OF CONTOURS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 373 1/3 20/1  
LOCKHEED-CALIFORNIA CO BURBANK

COMMERCIAL AIRCRAFT NOISE DEFINITION - L-  
1011 TRISTAR. VOLUME III - PROGRAM USER'S  
MANUAL. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 73-SEP 74,  
SEP 74 105P  
REPT. NO. LR-26075-VOL-3  
CONTRACT: DOT-FA73WA-3300  
MONITOR: FAA-EQ 73-6-VOL-3

UNCLASSIFIED REPORT

AVAILABILITY: MICROFICHE COPIES ONLY.  
SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A012 372  
AND VOLUME 4, AD-A012 374.

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*JET TRANSPORT  
PLANES, \*JET PLANE NOISE, AIRCRAFT NOISE, JET  
ENGINE NOISE, AERODYNAMIC NOISE, NOISE POLLUTION,  
ACOUSTIC SIGNATURES, ACOUSTIC ATTENUATION,  
TAKEOFF, AIRCRAFT LANDINGS, COMPUTER PROGRAMMING,  
USER NEEDS (U)  
IDENTIFIERS: L-1011 AIRCRAFT, \*NOISE LEVELS,  
DOT/4DZ/DA, DOT/5B (U)

CALCULATION PROCEDURES TO DESCRIBE AIRPLANE NOISE  
DURING TAKEOFF AND APPROACH HAVE BEEN PROGRAMMED FOR  
BATCH OPERATION ON A LARGE DIGITAL COMPUTER. THREE  
ROUTINES ARE INCLUDED. THE FIRST NORMALIZES FAR-  
FIELD NOISE SPECTRA TO REFERENCE CONDITIONS AND THEN  
DETERMINES SPECTRA AT VARIOUS DISTANCES FROM THE  
AIRPLANE, FOR AIRPORT ELEVATIONS BETWEEN SEA LEVELS  
AND 6000 FEET AND AMBIENT TEMPERATURES BETWEEN 30F  
AND 100F. OVERALL SOUND PRESSURE LEVELS, A-  
WEIGHTED NOISE LEVELS, PERCEIVED NOISE LEVELS, AND  
EFFECTIVE PERCEIVED NOISE LEVELS ARE CALCULATED.  
THE SECOND ROUTINE USES AERODYNAMIC AND ENGINE  
THRUST DATA TO PRODUCE TAKEOFF AND APPROACH FLIGHT  
PATH DESCRIPTION. VOLUME 3 PRESENTS THE LOGIC  
BEHIND THE CALCULATIONS AND OUTLINES THE  
COMPUTATIONAL PROCEDURES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 374 1/3 20/1  
LOCKHEED-CALIFORNIA CO BURBANK

COMMERCIAL AIRCRAFT NOISE DEFINITION - L-  
1011 TRISTAR. VOLUME IV-PROGRAM DESIGN  
SPECIFICATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 73-SEP 74,  
SEP 74 126P SHAPIRO, NATHAN ;  
REPT. NO. LR-26075-VOL-4  
CONTRACT: DOT-FA73WA-3300  
MONITOR: FAA-EQ 73-6-VOL-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-A012 373  
AND VOLUME 5, AD-A012 375.

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*JET TRANSPORT  
PLANES, \*JET PLANE NOISE, AIRCRAFT NOISE, JET  
ENGINE NOISE, AERODYNAMIC NOISE, NOISE POLLUTION,  
ACOUSTIC SIGNATURES, ACOUSTIC ATTENUATION,  
TAKEOFF, AIRCRAFT LANDINGS, COMPUTER  
PROGRAMMING (U)

IDENTIFIERS: L-1011 AIRCRAFT, \*NOISE LEVELS,  
DOT/4DZ/D , DOT/5B (U)

CALCULATION PROCEDURES TO DESCRIBE AIRPLANE NOISE  
DURING TAKEOFF AND APPROACH HAVE BEEN PROGRAMMED FOR  
BATCH OPERATION ON A LARGE DIGITAL COMPUTER. THREE  
ROUTINES ARE INCLUDED. THE FIRST NORMALIZES FAR-  
FIELD NOISE SPECTRA TO REFERENCE CONDITIONS AND THEN  
DETERMINES SPECTRA AT VARIOUS DISTANCES FROM THE  
AIRPLANE, FOR AIRPORT ELEVATIONS BETWEEN SEA LEVEL  
AND 6000 FEET AND AMBIENT TEMPERATURES BETWEEN 30F  
AND 100F. OVERALL SOUND PRESSURE LEVELS, A-  
WEIGHTED NOISE LEVELS, PERCEIVED NOISE LEVELS, AND  
EFFECTIVE PERCEIVED NOISE LEVELS ARE CALCULATED.  
THE SECOND ROUTINE USES AERODYNAMIC AND ENGINE  
THRUST DATA TO PRODUCE TAKEOFF AND APPROACH FLIGHT  
PATH DESCRIPTION. VOLUME 4 DESCRIBES THE COMPUTER  
PROGRAM AND GIVES INSTRUCTIONS FOR ITS OPERATION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 375 1/3 20/1  
LOCKHEED-CALIFORNIA CO BURBANK

COMMERCIAL AIRCRAFT NOISE DEFINITION - L-  
1011 TRISTAR. VOLUME V-COMPUTER  
PROGRAMMER'S MANUAL.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 73-SEP 74,  
SEP 74 370P SHAPIRO, NATHAN ;  
REPT. NO. LR-26075-VOL-5  
CONTRACT: DOT-FA73WA-3300  
MONITOR: FAA-EQ 73-6-VOL-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 4, AD-A012  
374.

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*JET TRANSPORT  
PLANES, \*JET PLANE NOISE, AIRCRAFT NOISE, JET  
ENGINE NOISE, AERODYNAMIC NOISE, NOISE POLLUTION,  
ACOUSTIC SIGNATURES, ACOUSTIC ATTENUATION,  
TAKEOFF, AIRCRAFT LANDINGS, COMPUTER PROGRAMS,  
USER NEEDS

(U)

IDENTIFIERS: L-1011 AIRCRAFT, \*NOISE LEVELS,  
DOT/4DZ/DA, DOT/5B

(U)

CALCULATION PROCEDURES TO DESCRIBE AIRPLANE NOISE  
DURING TAKEOFF AND APPROACH HAVE BEEN PROGRAMMED FOR  
BATCH OPERATION ON A LARGE DIGITAL COMPUTER. THREE  
ROUTINES ARE INCLUDED. THE FIRST NORMALIZES FAR-  
FIELD NOISE SPECTRA TO REFERENCE CONDITIONS AND THEN  
DETERMINES SPECTRA AT VARIOUS DISTANCES FROM THE  
AIRPLANE, FOR AIRPORT ELEVATIONS BETWEEN SEA LEVEL  
AND 6000 FEET AND AMBIENT TEMPERATURES BETWEEN 30F  
AND 100F. OVERALL SOUND PRESSURE LEVELS, A-  
WEIGHTED NOISE LEVELS, PERCEIVED NOISE LEVELS, AND  
EFFECTIVE PERCEIVED NOISE LEVELS ARE CALCULATED.  
THE SECOND ROUTINE USES AERODYNAMIC AND ENGINE  
THRUST DATA TO PRODUCE TAKEOFF AND APPROACH FLIGHT  
PATH DESCRIPTION. VOLUME 5 DESCRIBES THE COMPUTER  
PROGRAM AND GIVE INSTRUCTIONS FOR ITS OPERATION.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 384 1/3 20/1 13/2  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

AIRCRAFT NOISE DEFINITION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 73 78P WILLIAMS, B. G. ; YATES, R. ;  
REPT. NO. D6-41302  
CONTRACT: DOT-FA73WA-3254  
MONITOR: FAA-EQ 73-7-1

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*ACOUSTIC MEASUREMENT,  
NOISE REDUCTION, DATA ACQUISITION, DATA REDUCTION,  
TAKEOFF, APPROACH, CLIMBING  
IDENTIFIERS: DOT/5C, DOT/4DZ/DA, BOEING  
AIRCRAFT

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ACOUSTIC DATA ACQUISITION AND REDUCTION SYSTEMS ARE  
DISCUSSED TOGETHER WITH ANALYTICAL PROCEDURES USED TO  
DERIVE NOISE CHARACTERISTICS OF A SERIES OF BOEING  
AIRCRAFT TYPES. NOISE DATA ARE PRESENTED IN  
EPNDB AND DB(A) UNITS, FROM TAKEOFF TO LOW  
APPROACH THRUST AND FOR AIRCRAFT ALTITUDES FROM 200  
TO 12,000 FEET. AREAS OF POSSIBLE DATA DEFICIENCY  
ARE IDENTIFIED AND 90% CONFIDENCE LIMITS  
ESTABLISHED WHERE POSSIBLE. A FLIGHT TEST PROGRAM  
IS PROPOSED WITH THE OBJECTIVES OF IMPROVING DATA  
ACCURACY AND ESTABLISHING CONFIDENCE LIMITS OVER A  
WIDE RANGE OF OPERATING CONDITIONS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 385 1/3 13/2  
BOEING COMPUTER SERVICES INC SEATTLE WASH

BOEING AIRPLANE/NOISE PERFORMANCE COMPUTER  
PROGRAM. USER'S MANUAL.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 73 61P BHATIA, K. ; JAEGER, M. A. ;  
WILLIAMS, B. ; KATES, R. ;  
REPT. NO. BC  
CONTRACT: DOT 234  
MONITOR: FAA- 73-7-6

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*COMPUTER PROGRAMMING,  
MANUALS, TAKEOFF, APPROACH, NOISE REDUCTION,  
NOISE POLLUTION

(U)

IDENTIFIERS: BOEING AIRCRAFT, DOT/5C, DOT/  
4DZ/DA

(U)

THE DOCUMENT PROVIDES PROGRAM USAGE FOR THE  
BOEING AIRPLANE NOISE/PERFORMANCE COMPUTER  
PROGRAM. THE PROGRAM CALCULATES TAKEOFF AND  
APPROACH PROFILES, INCLUDING NOISE-ABATEMENT  
PROCEDURES, WITH OUTPUT DATA FOR DISTANCE, HEIGHT,  
SPEED, THRUST, RATE OF CLIMB, GRADIENT, DECK ANGLE,  
ENGINE PRESSURE RATIO, ROTOR SPEED, AND NOISE UNDER  
THE FLIGHTPATH IN UNITS OF EPNDB AND DB(A).  
SEVERAL CASES ARE INCLUDED IN A SAMPLE RUN OF THE  
PROGRAM TO ILLUSTRATE THE INPUT REQUIREMENTS AND  
OUTPUT CAPABILITIES.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A012 969 20/1 1/3  
BOEING CO WICHITA KANS WICHITA DIV

FAA JT3D QUIET NACELLE RETROFIT  
FEASIBILITY PROGRAM. VOLUME II. UPPER  
GOAL GROUND TESTING. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 71-MAR 74,  
APR 74 196P LINSCHIED, L. L. ;MAYER, J.  
E. ;VELDMAN, H. F. ;  
REPT. NO. D3-9042-3  
CONTRACT: DOT-FA71WA-25280  
MONITOR: FAA-RD 73-131-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-781  
826.

DESCRIPTORS: \*JET TRANSPORT PLANES, \*JET ENGINE  
NOISE, \*JET ENGINE NACELLES, NOISE REDUCTION,  
ACOUSTIC MEASUREMENT, PLUG NOZZLES, NOISE  
POLLUTION, CONICAL NOZZLES, RETROFITTING (U)  
IDENTIFIERS: T-3 ENGINES, JT-3D ENGINES,  
BOEING 707 AIRCRAFT, \*QUIET NACELLES, DOT/4DZ/  
DA, DOT/5B (U)

THE PHASE 2 QUIET NACELLE FOR JT3D POWERED  
707 AIRCRAFT IS IDENTICAL TO THE PHASE 1 QUIET  
NACELLE IN THAT IT RETAINS A TWO-RING ACOUSTICALLY  
TREATED INLET, HYDRAULICALLY POWERED FAN THRUST  
REVERSER AND 3/4 LENGTH ACOUSTICALLY TREATED FAN  
DUCTS INTEGRAL WITH THE SIDE COWL. THE PHASE 2  
NACELLE, HOWEVER, DIFFERS FROM THE PHASE 1 NACELLE  
IN THAT A PLUG NOZZLE REPLACES THE CONVENTIONAL  
CONICAL NOZZLE. BOTH CONFIGURATIONS RETAIN THE  
STANDARD 707 PRIMARY THRUST REVERSER. BOEING FUNDED  
MODEL AND FULL SCALE GROUND TESTS WERE PERFORMED TO  
PROVIDE INSIGHT AND TECHNICAL BACKGROUND RELATING TO  
ACOUSTIC AND PROPULSION PERFORMANCE OF PLUG NOZZLES.  
THE INFORMATION THUS OBTAINED WAS USED IN THE  
DESIGN OF THE FULL SCALE HARDWARE. FULL SCALE  
ENGINE GROUND TESTS WERE PERFORMED ON TWO  
CONFIGURATION OF THE PHASE 2 UPPER GOAL QUIET  
NACELLE TO DETERMINE ITS ACOUSTIC AND PROPULSION  
PERFORMANCE AND TO PERMIT COMPARISON WITH THE  
PERFORMANCE OF THE PHASE 1 NACELLE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 128 21/5 1/3 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

CORE ENGINE NOISE CONTROL PROGRAM.  
VOLUME I. IDENTIFICATION OF COMPONENT  
NOISE SOURCES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 72-APR 74,  
AUG 74 119P KAZAN, S. B. ; MATTA, R. K.  
; BILWAKESH, K. R. ; HARRIS, V. G. ; LATHAM, D. ;  
CONTRACT: DOT-FA72WA-3023  
MONITOR: FAA-RD 74-125-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A013  
129.

DESCRIPTORS: \*TURBOFAN ENGINES, \*JET ENGINE NOISE,  
AIRCRAFT NOISE, NOISE REDUCTION, NOISE POLLUTION,  
ENGINE COMPONENTS, ACOUSTIC MEASUREMENT,  
COMMERCIAL AIRCRAFT

(U)

IDENTIFIERS: \*NOISE SOURCES, DOT/4DZ/DA,  
DOT/5B

(U)

THE VARIOUS NOISE SOURCES CONSTITUTING THE CORE  
ENGINE NOISE FOR TURBOFAN ENGINES WERE IDENTIFIED AND  
RANK ORDERED. AN INVESTIGATION WAS MADE TO  
ASCERTAIN THE GENERATING MECHANISMS, CONTROLLING  
VARIABLES, MEANS OF IDENTIFICATION, AND THE EFFECT ON  
ENGINE DESIGN IF REDUCTION WERE REQUIRED FOR EACH OF  
EIGHT CORE ENGINE NOISE SOURCES. THE RELATIVE  
SIGNIFICANCE OF THE VARIOUS NOISE SOURCES WAS  
EVALUATED BY PREDICTING THE NOISE CONTRIBUTION OF THE  
INDIVIDUAL COMPONENTS BY THE METHODS DERIVED DURING  
THE COURSE OF THE CORE ENGINE NOISE CONTROL  
PROGRAM. THE PREDICTIONS WERE MADE FOR EACH OF  
THE THREE HYPOTHETICAL CYCLES FOR BYPASS RATIOS OF 4,  
7, AND 14, RESPECTIVELY, WHICH WERE FORMULATED TO  
ENCOMPASS A RANGE OF COMMERCIAL AIRCRAFT  
POWERPLANTS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 129 21/5 1/3 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

CORE ENGINE NOISE CONTROL PROGRAM.  
VOLUME II. IDENTIFICATION OF NOISE  
GENERATION AND SUPPRESSION MECHANISMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 72-APR 74,  
AUG 74 517P KAZIN, S. B. ; MATTA, R. K.  
; BILWAKESH, K. R. ; CLAPPER, W. S. ; EMERLING,  
J. J. ;  
CONTRACT: DOT-FA72WA-3023  
MONITOR: FAA-RD 74-125-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A013 128,  
AND VOLUME 3, AD-A013 131.

DESCRIPTORS: \*TURBOFAN ENGINES, \*JET ENGINE NOISE,  
AIRCRAFT NOISE, NOISE REDUCTION, NOISE POLLUTION,  
ENGINE COMPONENTS, ACOUSTIC MEASUREMENT,  
COMMERCIAL AIRCRAFT

(U)

IDENTIFIERS: \*NOISE SOURCES, DOT/4DZ/DA,  
DOT/5B

(U)

THE MECHANISMS OF NOISE GENERATION AND SUPPRESSION  
FOR THE VARIOUS CORE ENGINE NOISE SOURCES IN  
TURBOFANS WERE DEFINED THROUGH A BALANCED ANALYTICAL  
AND EXPERIMENTAL PROGRAM. MODEL, COMPONENT, AND  
ENGINE TESTS WERE USED TO SUBSTANTIATE THE RESULTS OF  
THE ANALYSIS AND TO DETERMINE THE BASIC NOISE  
GENERATING PARAMETERS. THE RESULTS WERE CAST IN A  
GENERAL FORM SO AS TO BE APPLICABLE TO A WIDE VARIETY  
OF CYCLES, INCLUDING FUTURE TECHNOLOGY TURBOFAN  
ENGINES. SEVERAL SUPPRESSION CONCEPTS WERE  
IDENTIFIED THROUGH ANALYSIS AND THROUGH LOGICAL  
EXTENSION OF EXPERIENCE WITH EARLIER PROGRAMS ON  
HIGH VELOCITY JET NOISE AND FAN/COMPRESSOR NOISE  
RESEARCH. THE SUPPRESSION CONCEPTS WERE VALIDATED  
THROUGH MODEL AND COMPONENT TESTS AND THROUGH  
EVALUATION OF AVAILABLE ENGINE DATA.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 131 21/5 1/3 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

CORE ENGINE NOISE CONTROL PROGRAM.  
VOLUME III. PREDICTION METHODS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 72-APR 74,  
AUG 74 179P KAZIN, S. B. ; MATTA, R. K.  
; BILWAKESH, K. R. ; EMMERLING, J. J. ; LATHAM,  
D. ;

CONTRACT: DOT-FA72WA-3023  
MONITOR: FAA-RD 74-125-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A013  
128.

DESCRIPTORS: \*TURBOFAN ENGINES, \*JET ENGINE NOISE,  
AIRCRAFT NOISE, NOISE REDUCTION, NOISE POLLUTION,  
ENGINE COMPONENTS, ACOUSTIC MEASUREMENT,  
COMMERCIAL AIRCRAFT

(U)

IDENTIFIERS: \*NOISE SOURCES, DOT/4DZ/DA,  
DOT/5B

(U)

PREDICTION METHODS FOR CORE ENGINE NOISE WERE  
REVIEWED AND EITHER UPDATED OR NEW NOISE EVALUATION  
TECHNIQUES FORMULATED FOR LOW VELOCITY COANNULAR  
JETS, COMBUSTORS ('CORE' NOISE), LOW PRESSURE  
TURBINES, INTERACTION BETWEEN TURBINE TONES AND FAN/  
CORE JET STREAMS, OBSTRUCTIONS IN THE FLOW PASSAGES  
AND CASING RADIATION. THE DEVELOPMENT WAS BASED, TO  
A LARGE EXTENT, ON THE ANALYTICAL INVESTIGATION AND  
THE MODEL, COMPONENT AND ENGINE TESTS EVALUATED  
DURING PHASES 2 AND 3 OF THIS PROGRAM. THE  
RESULTS WERE CAST IN A GENERAL FORM, SO AS TO BE  
APPLICABLE TO A WIDE VARIETY OF CYCLES, INCLUDING  
PRESENT AND FUTURE TURBOFAN ENGINES. THE  
PREDICTION METHODS WERE VALIDATED WITH MEASURED  
ACOUSTIC DATA WHEREVER POSSIBLE.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 177 1/2 20/1 1/3  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

AIRCRAFT NOISE DEFINITION - INDIVIDUAL  
AIRCRAFT TECHNICAL DATA--MODEL 727.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

DEC 73 204P WILLIAMS, B. G. ; YATES, R. ;  
REPT. NO. D6-42141-2  
CONTRACT: DOT-FA73-WA-3254  
MONITOR: FAA-EQ 73-7-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED DEC 73, AD-  
A012 384.

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*TRANSPORT  
AIRCRAFT, \*AIRCRAFT NOISE, FLIGHT MANEUVERS,  
TAKEOFF, APPROACH, ACOUSTIC MEASUREMENT, DATA  
ACQUISITION, NOISE REDUCTION

(U)

IDENTIFIERS: BOEING 727 AIRCRAFT, DOT/4DZ/DA,  
DOT/5B

(U)

TECHNICAL DATA ARE PRESENTED FOR GRAPHICALLY  
DETERMINING TAKEOFF, CUTBACK, AND APPROACH  
PERFORMANCE AND NOISE UNDER THE FLIGHTPATH FOR  
VARIOUS BOEING MODEL 727 AIRCRAFT CURRENTLY IN  
OPERATION. DATA ARE INCLUDED FOR ALL CERTIFIED FLAP  
POSITIONS AND COVER OPERATIONS FROM AIRPORTS FROM SEA  
LEVEL TO 6000 FT. ALTITUDE AT TEMPERATURES FROM  
30F TO 100F. WITH WINDS FROM -10 TO +30 KN OVER  
THE ENTIRE OPERATIONAL WEIGHT RANGE. NOISE DATA ARE  
SHOWN FOR UNITS OF EPND B AND DB(A) FROM TAKEOFF  
TO LOW APPROACH THRUST AND FOR AIRCRAFT ALTITUDES  
BETWEEN 200 AND 12,000 FT.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 365 17/2  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

ACOUSTIC NOISE SUPPRESSION IN AIRBORNE  
COMMUNICATIONS.

(U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT TECHNICAL  
REPT.,

JUL 75 55P MAYER, MITCHELL S. ;  
REPT. NO. ECOM-4336  
PROJ: DA-1-F-2623207-DB-97  
TASK: 1-F-2623207-DB-9701

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-767 222.

DESCRIPTORS: \*MICROPHONES, \*NOISE REDUCTION,  
\*AIRCRAFT NOISE, \*INTERCOMMUNICATION SYSTEMS,  
\*EARPHONES, INTELLIGIBILITY, ACOUSTIC FILTERS,  
HELMETS, HEARING, HELICOPTERS, SUPPRESSORS,  
NOISE ANALYZERS, CANCELLATION, FREQUENCY RESPONSE,  
CARGO AIRCRAFT

(U)

IDENTIFIERS: CH-47 AIRCRAFT, H-47 AIRCRAFT

(U)

ONE OF THE MAJOR RECOMMENDATIONS OF ECOM REPORT  
4140 (AD-767 222) WAS THE IMPROVEMENT OR  
REPLACEMENT OF THE M-87 MICROPHONE WITH ONE THAT  
HAD IMPROVED NOISE CANCELLING CAPABILITIES AND A  
FLATTER FREQUENCY RESPONSE. THIS AREA OF CONCERN IS  
COVERED EXTENSIVELY. A PROGRAM HAS BEEN  
ESTABLISHED TO FURTHER EVALUATE MILITARIZED,  
IMPROVED-MICROPHONE CANDIDATES FOR POSSIBLE  
INCORPORATION INTO THE ARMY SYSTEM IN FY-77.  
ANOTHER RECOMMENDATION OF ECOM REPORT 4140 WAS  
THE IMPROVEMENT OF THE HELI-NOTCH FILTER  
(PRESENTLY ON ALL CH-47 AIRCRAFT) WITH AN  
EXTENDED FREQUENCY RESPONSE AND THE CAPABILITY OF  
ELIMINATING ALL PURE TONE COMPONENTS NOT CANCELLED BY  
THE MICROPHONE. ONE SUCH FILTER WAS INVESTIGATED  
AND WAS FOUND TO BE SOMEWHAT SUCCESSFUL IN ACHIEVING  
THIS GOAL. AN AD PHASE OF THE WHINE FILTER  
DEVELOPMENT IS EXPECTED TO BEGIN IN FY-76.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 435 20/1 1/5  
MITRE CORP MCLEAN VA

AIRCRAFT SOUND DESCRIPTION SYSTEM (ASDS)  
APPLICATION PROCEDURES. VOLUME III. DATA  
TABLES,

(U)

SEP 74 358P GOLDMAN, DONALD ; MAGINNIS,  
FRANCIS X. ;  
REPT. NO. MTR-6616-SER-1-VOL-3  
CONTRACT: DOT-FA69NS-162  
MONITOR: FAA-EQ 74-2-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED MAR 74,  
AD-786 614. SEE ALSO REPORT DATED MAR 74, AD-786  
613.

DESCRIPTORS: \*AIRPORTS, \*AIRCRAFT NOISE, NOISE  
POLLUTION, PERIODIC VARIATIONS,  
EXPOSURE(PHYSIOLOGY), ACOUSTIC MEASUREMENT,  
AIRCRAFT LANDINGS, TAKEOFF, DATA BASES

(U)

IDENTIFIERS: \*NOISE EXPOSURE, \*NOISE LEVELS,  
\*AIRCRAFT SOUND DESCRIPTION SYSTEMS, SCENARIOS,  
DOT/4DZ/DA, DOT/5B

(U)

THE AIRCRAFT SOUND DESCRIPTION SYSTEM  
(ASDS) IS A METHOD OF DESCRIBING AIRCRAFT NOISE.  
IT HAS BEEN ESTABLISHED AS THE BASIC FAA  
TECHNIQUE FOR PREDICTING COMMUNITY NOISE EXPOSURE  
CAUSED BY AIRCRAFT OPERATIONS. THIS REPORT (IN  
FOUR VOLUMES) IS A DESCRIPTION OF THE MANUAL AND  
COMPUTER TECHNIQUES FOR APPLYING ASDS AS WELL AS A  
CURRENT SET OF NOISE EXPOSURE CONTOURS. THIS VOLUME  
PRESENTS IN TABULAR FORM A SET OF 239 ASDS NOISE  
EXPOSURE CONTOURS COVERING 51 DIFFERENT AIRCRAFT  
TYPES. A DESCRIPTION OF THE DATA TABLES AND A  
STATEMENT OF CONDITIONS AND ASSUMPTIONS IN DEVELOPING  
THE DATA ARE PRESENTED. THE OTHER VOLUMES IN THE  
SET ARE: VOLUME 1, 'OVERVIEW,' VOLUME 2,  
'MANUAL APPLICATION PROCEDURES,' AND VOLUME  
4, 'COMPUTER APPLICATION PROCEDURES'. THIS  
DOCUMENT CONTAINS UPDATED VERSIONS OF THE TABLES  
PUBLISHED IN REPORT FAA-EQ-74-2, VOLUME 3,  
DATED MARCH 1974.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 768 1/3 13/2  
BOEING COMPUTER SERVICES INC SEATTLE WASH

BOEING AIRPLANE/NOISE PERFORMANCE COMPUTER  
PROGRAM. PROGRAMMER'S MANUAL.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 73 727P BHATIA, K. ; JAEGER, M. A. ;  
JOHNSON, S. ; WILLIAMS, B. G. ;  
REPT. NO. BCS-G0473  
CONTRACT: DOT-FA73-WA-3254  
MONITOR: FAA-EQ 73-7-7

UNCLASSIFIED REPORT

AVAILABILITY: AVAILABLE IN MICROFICHE ONLY.  
SUPPLEMENTARY NOTE: SEE ALSO AD-A012 385.

DESCRIPTORS: \*AIRCRAFT NOISE, \*COMPUTER PROGRAMMING,  
MANUALS, TAKEOFF, APPROACH, NOISE REDUCTION,  
NOISE POLLUTION

(U)

IDENTIFIERS: BOEING AIRCRAFT, DOT/5C, DOT/  
4DZ/DA, NOISE ABATEMENT

(U)

THE DOCUMENT PROVIDES PROGRAMMER INFORMATION FOR  
THE BOEING AIRPLANE NOISE/PERFORMANCE  
COMPUTER PROGRAM. THE PROGRAM CALCULATES  
TAKEOFF AND APPROACH PROFILES, INCLUDING NOISE-  
ABATEMENT PROCEDURES, WITH OUTPUT DATA FOR DISTANCE,  
HEIGHT, SPEED, THRUST, RATE OF CLIMB, GRADIENT DECK  
ANGLE, ENGINE PRESSURE RATIO, ROTOR SPEED, AND NOISE  
UNDER THE FLIGHT PATH IN UNITS OF EPNDB AND  
DB(A). INFORMATION PROVIDED INCLUDES PROGRAM  
USAGE, SUBPROGRAM DESCRIPTION, PROGRAM FLOW, AND  
OTHER INFORMATION REQUIRED BY COMPUTER PROGRAMMERS  
FOR THE OPERATION, MAINTENANCE, AND MODIFICATION OF  
THE PROGRAM. APPENDIXES INCLUDE DATA TABLES, DATA  
TABLE SOURCE, SAMPLE RUN, AND COMPLETE PROGRAM  
LISTING.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A013 794 20/1 1/3  
ARNOLD ENGINEERING DEVELOPMENT CENTER ARNOLD AIR FORCE  
STATION TENN

JET NOISE: A SURVEY AND A PREDICTION FOR  
SUBSONIC FLOWS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 73-SEP 74,  
AUG 75 78P HARSHA, PHILIP T. ;  
REPT. NO. AEDC-TR-75-85  
PROJ: ARO-RF438 AND ARO-R32P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH ARO,  
INC., TULLAHOMA, TENN. REPT. NO. ARO-ETF-TR-  
74-115.

DESCRIPTORS: \*JET ENGINE NOISE, \*AERODYNAMIC NOISE,  
JET PLANE NOISE, ACOUSTIC FIELDS, TURBULENT FLOW,  
FLOW FIELDS, KINETIC ENERGY, NOISE POLLUTION,  
MATHEMATICAL ANALYSIS

(U)

IDENTIFIERS: \*AEROACOUSTICS

(U)

THE STATE-OF-THE-ART OF THE PREDICTION OF TURBULENT  
JET NOISE IS SURVEYED. THIS SURVEY INCLUDES A  
DESCRIPTION OF THE AVAILABLE EXPERIMENTAL DATA ON  
SUBSONIC AND SUPERSONIC, COLD AND HOT JETS, AND OF  
PRESENT THEORETICAL TREATMENTS OF THE MECHANISMS OF  
TURBULENT JET NOISE PRODUCTION. A DETAILED  
ANALYSIS OF THE PRODUCTION OF SUBSONIC COLD JET  
NOISE, BASED ON THE ACOUSTIC ANALOGY FORMULATION, IS  
DESCRIBED, AND RESULTS OF COMPUTATIONS USING THIS  
ANALYSIS AND A TURBULENT KINETIC ENERGY ANALYSIS OF  
THE JET FLOW FIELD ARE PRESENTED AND COMPARED WITH  
REPRESENTATIVE EXPERIMENTAL DATA.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A014 640 1/3 20/1  
UNITED TECHNOLOGIES CORP WINDSOR LOCKS CONN HAMILTON  
STANDARD DIV

A COMPREHENSIVE REVIEW OF HELICOPTER NOISE  
LITERATURE.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 75 188P MAGLIOZZI, B. ; METZGER, F.  
B. ; BAUSCH, W. ; KING, R. J. ;  
CONTRACT: DOT-FA74WA-3477  
MONITOR: FAA-RD 75-79

UNCLASSIFIED REPORT

DESCRIPTORS: \*HELICOPTERS, \*AIRCRAFT NOISE, STATE  
OF THE ART, BIBLIOGRAPHIES, IMPULSE NOISE, GEAR  
NOISE, PROPELLER NOISE, GAS TURBINES, ENGINE  
NOISE, TOLERANCES (PHYSIOLOGY), NOISE REDUCTION  
IDENTIFIERS: NOISE CERTIFICATION CRITERIA

(U)  
(U)

THIS REPORT SUMMARIZES THE STATE-OF-THE-ART IN  
HELICOPTER NOISE. IT INCLUDES A BIBLIOGRAPHY OF  
REPORTS ON ALL COMPONENTS OF HELICOPTER NOISE  
INCLUDING MAIN ROTOR, TAIL ROTOR, ENGINE AND GEARBOX.  
LITERATURE ON HELICOPTER NOISE REDUCTION AND  
SUBJECTIVE EVALUATION OF HELICOPTER NOISE WERE ALSO  
INCLUDED. CAPSULE SUMMARIES OF IMPORTANT REPORTS  
ARE INCLUDED WHICH DESCRIBE THE PURPOSE OF THE  
REPORT, SUMMARIZES THE IMPORTANT RESULTS, COMPARES  
THE REPORT WITH OTHERS ON THE SAME SUBJECT, AND  
PROVIDES A CRITICAL EVALUATION OF THE WORK PRESENTED.  
IT IS CONCLUDED THAT THE AVAILABLE PREDICTION  
METHODOLOGY PROVIDES A MEANS FOR ESTIMATING  
HELICOPTER SOURCES ON A GROSS BASIS. HOWEVER, THE  
MECHANISMS OF NOISE GENERATION ARE STILL NOT FULLY  
UNDERSTOOD, ALTHOUGH THE EXPERIMENTAL AND THEORETICAL  
TOOLS ARE NOW AVAILABLE TO CONDUCT THE DEFINITIVE  
EXPERIMENTS AND ESTABLISH THE MATHEMATICAL MODELS  
NEEDED FOR ACCURATE DEFINITION OF HELICOPTER NOISE  
GENERATION MECHANISMS. SPECTRUM ANALYSES OF  
HELICOPTER NOISE SHOW THAT MAIN ROTOR, TAIL ROTOR,  
AND ENGINE SOURCES CONTRIBUTE SIGNIFICANTLY TO  
ANNOYANCE. IN CASES WHERE THESE SOURCES HAVE BEEN  
HEAVILY SUPPRESSED, GEARBOX NOISE WILL ALSO APPEAR AS  
A SIGNIFICANT CONTRIBUTOR TO ANNOYANCE. THEREFORE,  
QUIETER HELICOPTERS MUST INCLUDE SUPPRESSION OF ALL  
OF THESE COMPONENTS. FOR CERTIFICATION, THE  
LITER

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A014 642 1/3 20/1  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

AIRCRAFT NOISE DEFINITION. INDIVIDUAL  
AIRCRAFT TECHNICAL DATA-MODEL 707.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 73 94P WILLIAMS, BILLY G. ; YATES,  
RODNEY ; BUCHHOLZ, R. E. ;  
REPT. NO. D6-42141-1  
CONTRACT: DOT-FA73WA-3254  
MONITOR: FAA-EQ 73-7-2

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*JET TRANSPORT PLANES,  
\*JET PLANE NOISE, TAKEOFF, APPROACH, FLIGHT  
PATHS, PERFORMANCE(ENGINEERING), GRAPHS, JET  
ENGINE NOISE  
IDENTIFIERS: BOEING 707 AIRCRAFT

(U)

(U)

TECHNICAL DATA ARE PRESENTED FOR GRAPHICALLY  
DETERMINING TAKEOFF, CUTBACK, AND APPROACH  
PERFORMANCE AND NOISE UNDER THE FLIGHTPATH FOR  
VARIOUS BOEING MODEL 707 AIRCRAFT CURRENTLY IN  
OPERATION. DATA ARE INCLUDED FOR ALL CERTIFIED FLAP  
POSITIONS AND COVER OPERATIONS FROM AIRPORTS FROM SEA  
LEVEL TO 6000 FT ALTITUDE AT TEMPERATURES FROM 30 TO  
100F WITH WINDS FROM -10 TO +30 KN OVER THE  
ENTIRE OPERATIONAL WEIGHT RANGE. NOISE DATA ARE  
SHOWN FOR UNITS OF EPNDB AND DB(A) FROM TAKEOFF  
TO LOW APPROACH THRUST AND FOR AIRCRAFT ALTITUDES  
BETWEEN 200 AND 12,000 FT. (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A014 644 20/1 4/2  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS  
RESEARCH AND DEVELOPMENT SERVICE

EFFECT OF TEMPERATURE AND HUMIDITY ON  
AIRCRAFT NOISE PROPAGATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 75 106P MCCOLLOUGH, 'JB' ; TRUE,  
HAROLD C. ;  
REPT. NO. FAA-RD-75-100

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*SOUND TRANSMISSION,  
PEAK VALUES, ATMOSPHERIC TEMPERATURE, HUMIDITY,  
ACOUSTIC MEASUREMENT, INTENSITY, ATMOSPHERES,  
TEMPERATURE INVERSION, HIGH ALTITUDE, LOW  
ALTITUDE, THRUST, ABSORPTION, LAPSE RATE,  
LAYERS, ACOUSTIC PROPERTIES, NUMERICAL METHODS AND  
PROCEDURES, CORRECTIONS, DATA REDUCTION, JET  
TRANSPORT PLANES, WEATHER, SPECTRUM ANALYSIS, JET  
ENGINE NOISE, TEST METHODS, STANDARDIZATION,  
METEOROLOGICAL DATA  
IDENTIFIERS: DC-9 AIRCRAFT

(U)

(U)

THIS REPORT PRESENTS THE RESULTS OF A TEST PROGRAM  
CONDUCTED TO MEASURE THE EFFECT OF VARYING  
METEOROLOGICAL CONDITIONS ON AIRCRAFT FLYOVER NOISE  
LEVELS. DETAILED TEMPERATURE AND HUMIDITY DATA  
WERE OBTAINED USING AN INSTRUMENT SYSTEM CARRIED BY A  
LIGHT AIRCRAFT. HIGH AND LOW ALTITUDE INVERSIONS AS  
WELL AS STANDARD LAPSE RATE ATMOSPHERES WERE  
INVESTIGATED. LEVEL FLYOVERS WERE CONDUCTED, USING  
A DC-9-10 AIRCRAFT OPERATED AT A THRUST OF 6,000  
LBS., AS A CONSTANT NOISE SOURCE. MEASURED NOISE  
LEVELS VARIED UP TO 4 EPNOB DEPENDING UPON THE  
ABSORPTIVE PROPERTIES OF THE ATMOSPHERE. SEVERAL  
ANALYSIS PROCEDURES WERE INVESTIGATED IN AN EFFORT TO  
CORRECT NOISE DATA FOR WEATHER CONDITIONS. WEATHER  
CORRECTION PROCEDURES BASED ON SINGLE POINT  
METEOROLOGICAL DATA WERE INADEQUATE TO NORMALIZE, TO  
REFERENCE CONDITIONS, THE NOISE DATA FOR THOSE  
CONDITIONS WITH NON-UNIFORM TEMPERATURE AND HUMIDITY  
PROFILES. A LAYERED ANALYSIS PROCEDURE, HOWEVER,  
NORMALIZED ALL FLYOVER NOISE LEVELS TO THOSE LEVELS  
TAKEN UNDER NEAR REFERENCE CONDITIONS. THE LAYERED  
ANALYSIS PROCEDURE INCREMENTALLY ADJUSTS THE MEASURED  
PEAK SPECTRA BASED ON THE ACOUSTIC ABSORPTION IN EACH  
INCREMENT.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A014 964 1/2 20/1 1/3  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

AIRCRAFT NOISE DEFINITION. INDIVIDUAL  
AIRCRAFT TECHNICAL DATA MODEL - 737.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 73 137P WILLIAMS, B. G. ; YATES, R. ;  
REPT. NO. D6-42141-3  
CONTRACT: DOT-FA73WA-3254  
MONITOR: FAA-EQ 73-7-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT AD-A013 177.

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*TRANSPORT  
AIRCRAFT, \*AIRCRAFT NOISE, GRAPHICS, TAKEOFF,  
APPROACH, AIRPORTS, ACOUSTIC DATA, CHARTS,  
PERFORMANCE, NOISE(SOUND), FLIGHT  
MANEUVERS

(U)

IDENTIFIERS: BOEING 727 AIRCRAFT, DOT/4DZ/DA,  
DOT/5B

(U)

TECHNICAL DATA ARE PRESENTED FOR GRAPHICALLY  
DETERMINING TAKEOFF, CUTBACK, AND APPROACH  
PERFORMANCE AND NOISE UNDER THE FLIGHTPATH FOR  
VARIOUS BOEING MODEL 737 AIRCRAFT CURRENTLY IN  
OPERATION. DATA ARE INCLUDED FOR ALL CERTIFIED FLAP  
POSITIONS AND COVER OPERATIONS FROM AIRPORTS FROM SEA  
LEVEL TO 6000 FT ALTITUDE AT TEMPERATURES FROM 30 TO  
100F WITH WINDS FROM -10 TO +30 KN OVER THE  
ENTIRE OPERATIONAL WEIGHT RANGE. NOISE DATA ARE  
SHOWN FOR UNITS TO EPNDB AND DB(A) FROM TAKEOFF  
TO LOW APPROACH THRUST AND FOR AIRCRAFT ALTITUDES  
BETWEEN 200 TO 12,000 FT.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A015 688 21/5 20/1  
PRINCETON UNIV N J DEPT OF AEROSPACE AND MECHANICAL  
SCIENCES

RESEARCH ON NOISE GENERATED BY DUCTED AIR-  
FUEL COMBUSTION SYSTEMS.

(U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 4, MAR 74-JUL 75,  
AUG 75 47P PLETT, E. G. ; SHAFER, H.  
J. ; SUMMERFIELD, M. ;  
CONTRACT: N00014-67-A-0150-0029, N00014-75-C-0507

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL REPT. NO. 3, AD-  
785 028.

DESCRIPTORS: \*GAS TURBINES, \*JET ENGINE NOISE,  
COMBUSTORS, DUCTED BODIES, COMBUSTION, FUELS,  
AIR FLOW, NOISE REDUCTION

(U)

IDENTIFIERS: \*COMBUSTION NOISE, \*NOISE GENERATION,  
\*NOISE SOURCES

(U)

A TWO-PRONGED APPROACH TO THE STUDY OF NOISE  
GENERATION BY COMBUSTION IN A CONFINED FLOW SYSTEM,  
SIMILAR TO A JET ENGINE CONFIGURATION, HAS BEEN  
FOLLOWED. ONE ASPECT DEALS WITH THE MECHANISMS OF  
NOISE GENERATION BY COMBUSTION; THE OTHER ASPECT  
DEALS WITH THE EFFECT OF CONFINEMENT ON THE NOISE  
GENERATION AND RADIATING PROPERTIES OF AN UNSTEADY  
COMBUSTION-DUCT-FLOW INTERACTION. AN EXPERIMENT TO  
EVALUATE THE RELATIVE IMPORTANCE OF SEVERAL OF THE  
TERMS APPEARING IN THE THEORETICAL FORMULATION  
DESCRIBING COMBUSTION NOISE SOURCES HAS BEEN  
DEVELOPED.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A016 278 1/3 20/1  
DOUGLAS AIRCRAFT CO LONG BEACH CALIF

AIRCRAFT NOISE DEFINITION. PHASE I.  
ANALYSIS OF EXISTING DATA FOR THE DC-8, DC-9 AND DC-10 AIRCRAFT. (U)

DESCRIPTIVE NOTE: FINAL REPT. OCT 72-AUG 73,  
AUG 73 373P GOODMAN, J. S. ;  
REPT. NO. MDC-J5973  
CONTRACT: DOT-FA73WA-3161  
MONITOR: FAA-EQ 73-5

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*JET AIRCRAFT,  
\*AIRCRAFT NOISE, AERODYNAMIC NOISE, JET ENGINE  
NOISE, FLIGHT PATHS, FLYBY, ACOUSTICS, COMPUTER  
PROGRAMS, APPROACH, GLIDE SLOPE (U)  
IDENTIFIERS: DC-8 AIRCRAFT, DC-9 AIRCRAFT, DC-10  
AIRCRAFT, T-3 ENGINES, JT3D ENGINES, T-8  
ENGINES, JT8D-7 ENGINES, JT8D-9 ENGINES,  
\*NOISE LEVELS, DOT/4DZ/DA (U)

THE EFFORTS IN THIS PHASE OF THE 'AIRCRAFT  
NOISE DEFINITION' PROJECT WAS COMPRISED OF  
PROCESSING AND ANALYSIS OF EXISTING ACOUSTIC AND  
PERFORMANCE DATA AND PREPARING ACOUSTIC AND  
PERFORMANCE (BASED ON AVERAGE ENGINE) GRAPHICAL  
AND COMPUTER PRESENTATIONS FOR TWO JT3D TURBOFAN-  
POWERED DC-8S, ONE WITH SHORT AND ONE WITH LONG FAN  
DUCTS; TWO DC-9S, ONE WITH JT8D-7 AND ONE WITH  
JT8D-9 ENGINES; AND THE DC-10-10 AND DC-10-40  
AIRCRAFT. THE ACOUSTIC DATA INCLUDED REFERENCE-DAY  
EPNL AND PEAK A-WEIGHTED SOUND LEVEL CURVES WITH  
EMPIRICALLY DEVELOPED CURVES FOR ADJUSTING THE NOISE  
LEVELS TO TEMPERATURES FROM 30F TO 100F WITH THE  
RELATIVE HUMIDITY HELD CONSTANT AT 70 PERCENT. THE  
PERFORMANCE DATA INCLUDE PROVISIONS FOR A TEMPERATURE  
VARIATION FROM 30F TO 100F AND RUNWAY ALTITUDE  
FROM SEA LEVEL TO 6000 FEET. DATA ACCURACY IS  
DESCRIBED IN TERMS OF ASSIGNABLE CONFIDENCE LIMITS. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A017 082 20/1 13/13 1/2  
BOOZ-ALLEN APPLIED RESEARCH INC BETHESDA MD

ANALYSIS OF THE EFFECT OF CONCORDE AIRCRAFT  
NOISE ON HISTORIC STRUCTURES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 75 78P HERSHEY, ROBERT L. ; KEVALA,  
RUSS J. ; BURNS, SHARON L. ;  
CONTRACT: DOT-FA75WA-3720  
MONITOR: FAA-RD 75-118

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, DAMAGE ASSESSMENT,  
BUILDINGS, VIBRATION, FLIGHT PATHS, SUBSONIC  
FLIGHT, STRUCTURAL MEMBERS, BRIDGES, HISTORY,  
MATHEMATICAL PREDICTION, WINDOWS, CEILING,  
GLASS, STRUCTURAL RESPONSE, CRACKS,  
FAILURE (MECHANICS), PROBABILITY DENSITY  
FUNCTIONS, NOISE POLLUTION, ENVIRONMENTAL  
PROTECTION, JET TRANSPORT PLANES, TAKEOFF,  
AIRCRAFT LANDINGS

(U)

IDENTIFIERS: CONCORDE AIRCRAFT, ENVIRONMENTAL  
IMPACT, DOT/5C, DOT/5M

(U)

STATISTICAL ESTIMATES OF BREAKAGE PROBABILITIES  
FROM NOISE-INDUCED VIBRATION WERE CALCULATED FOR  
SUSCEPTIBLE STRUCTURAL ELEMENTS AT FIVE HISTORIC  
SITES NEAR THE PROPOSED SUBSONIC FLIGHT PATH OF THE  
CONCORDE AIRCRAFT. THE FIVE SITES INVESTIGATED  
WERE: SULLY PLANTATION, CHANTILLY, VA.;  
DRANESVILLE TAVERN, DRANESVILLE, VA.; BROAD  
RUN BRIDGE AND TOLLHOUSE, LOUDOUN COUNTY,  
VA.; MANASSAS BATTLEFIELD PARK, MANASSAS,  
VA.; AND ST. GEORGE'S CHURCH, HEMPSTEAD,  
N. Y. THE STRUCTURAL FEATURES ANALYZED INCLUDED  
WINDOWS, BRICK CHIMNEYS, STONE BRIDGE, AND A PLASTER  
CEILING. THE CALCULATED BREAKAGE PROBABILITIES FOR  
THESE FEATURES WERE GENERALLY LESS THAN .001 FOR A  
YEAR OF PROJECTED CONCORDE OVERFLIGHTS--  
CONSIDERABLY BELOW THE FAILURE RATE THAT WOULD BE  
EXPECTED JUST FROM EXPOSURE TO THE WEATHER. THE  
ONLY EXCEPTION WAS THE PROBABILITY OF BREAKAGE OF  
LITES OF GLASS AT SULLY PLANTATION WHICH WERE  
ALREADY CRACKED AND ARE EXPECTED TO BE REPLACED.  
THE RESPONSE PROBABILITY DENSITY FUNCTION  
TECHNIQUE, USED IN PREVIOUS STUDIES OF STRUCTURAL  
RESPONSE TO AIRCRAFT NOISE, WAS THE METHOD OF  
CALCULATION.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A017 741 20/11 1/3 13/2  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

COMMUNITY NOISE EXPOSURE RESULTING FROM  
AIRCRAFT OPERATIONS: ACQUISITION AND  
ANALYSIS OF AIRCRAFT NOISE AND PERFORMANCE  
DATA. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 75 145P BISHOP, DWIGHT E. ; GALLOWAY,  
WILLIAM J. ;  
REPT. NO. BBN-2583  
CONTRACT: F33615-73-C-4160  
PROJ: AF-7231  
TASK: 723104  
MONITOR: AMRL TR-73-107

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED NOV 74, AD-  
A004 822.

DESCRIPTORS: \*AIRCRAFT NOISE, \*URBAN AREAS, \*NOISE  
POLLUTION, AIRPORTS, AIRCRAFT ENGINE NOISE, NOISE  
ANALYZERS, DATA REDUCTION, NOISE REDUCTION,  
ACOUSTIC MEASUREMENT (U)  
IDENTIFIERS: \*NOISE LEVELS, \*NOISE EXPOSURE (U)

THIS REPORT IS ONE OF A SERIES DESCRIBING THE  
RESEARCH PROGRAM UNDERTAKEN BY THE AEROSPACE  
MEDICAL RESEARCH LABORATORY TO DEVELOP  
PROCEDURES FOR PREDICTING COMMUNITY NOISE EXPOSURE  
RESULTING FROM AIRCRAFT OPERATIONS. THIS REPORT  
OUTLINES THE ACOUSTIC MEASUREMENT TEST CONDITIONS,  
THE ACOUSTIC DATA REDUCTION AND INTERPRETATION  
PROCEDURES, AND THE TYPE OF AIRCRAFT PERFORMANCE  
INFORMATION NEEDED TO OBTAIN A NOISE DATA FILE FOR  
PREDICTING THE NOISE PRODUCED BY AIRCRAFT OPERATIONS.  
THE PROCEDURES RESULT IN THE DESCRIPTIONS OF THE  
NOISE OF AN AIRCRAFT IN TERMS OF THE EFFECTIVE  
PERCEIVED NOISE LEVEL, THE SOUND EXPOSURE LEVEL AND  
SEVERAL OTHER NOISE MEASURES. LEVEL FLIGHT  
MEASUREMENTS AND STATIC ENGINE NOISE TESTS ARE  
DESCRIBED, AND ARE APPLICABLE TO CONVENTIONAL FIXED  
WING AIRCRAFT AND HELICOPTERS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A018 036 20/1 1/2 5/10  
MAN-ACOUSTICS AND NOISE INC SEATTLE WASH

NOISE CERTIFICATION CRITERIA AND  
IMPLEMENTATION CONSIDERATIONS FOR V/STOL  
AIRCRAFT. VOLUME I.

(U)

DESCRIPTIVE NOTE: FINAL REPT.

NOV 75 84P  
REPT. NO. MAN-101H  
CONTRACT: DOT-FA74WAI-490  
MONITOR: FAA-RD 75-190

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMMERCIAL AIRCRAFT, \*AIRCRAFT NOISE,  
\*SHORT TAKEOFF AIRCRAFT, \*PSYCHOPHYSICS,  
INTENSITY, EXPERIMENTAL DATA, TEST METHODS,  
HUMAN FACTORS ENGINEERING, MAGNETIC TAPE,  
STANDARDS, VERTICAL TAKEOFF AIRCRAFT, RATINGS

(U)

IDENTIFIERS: ANNOYANCE, NOISE LEVELS,  
CERTIFICATION, JUDGMENT, CRITERIA, DOT/2A,  
DOT/5B

(U)

AS A MEANS OF DETERMINING THE ACCURACY AND  
RELIABILITY OF ENGINEERING CALCULATION PROCEDURES  
THAT COULD BE UTILIZED AS A BASIS FOR NOISE  
CERTIFICATION OF V/STOL COMMERCIAL AIRCRAFT, 36  
PERSONS MADE ANNOYANCE JUDGMENTS TO 34 NOISE SIGNALS  
PRESENTED AT 5 DIFFERENT LEVELS. THE SIGNALS  
INCLUDED RECORDINGS OF CONVENTIONAL JET AIRCRAFT  
OPERATIONS, TURBOPROP AND RECIPROCATING ENGINE  
POWERED COMMERCIAL AIRCRAFT, HELICOPTER FLYBYS, AND  
SIMULATIONS OF V/STOL OPERATIONS. BOTH  
RELATIVE ANNOYANCE AND ABSOLUTE ACCEPTABILITY  
JUDGMENTS WERE OBTAINED.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A019 759 20/1 1/2  
DOUGLAS AIRCRAFT CO LONG BEACH CALIF

AIRCRAFT NOISE DEFINITION. PHASE II.  
ANALYSIS OF FLYOVER-NOISE DATA FOR THE DC-  
8-61 AIRCRAFT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. NOV 73-AUG 74,  
AUG 74 172P DELAPP, R. E. ;  
REPT. NO. MDC-J4443  
CONTRACT: DOT-FA73WA-3161  
MONITOR: FAA-EQ 74-5

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED AUG 73, AD-  
A016 278.

DESCRIPTORS: \*AIRCRAFT NOISE, \*COMMERCIAL AIRCRAFT,  
\*JET AIRCRAFT, DEFINITIONS, DATA BASES, LONG  
RANGE(DISTANCE), FLYBY, ALTITUDE, FLIGHT  
PATHS, DATA ACQUISITION, VARIATIONS, CONFIDENCE  
LIMITS, WEATHER, FLIGHT TESTING, ACOUSTIC  
MEASUREMENT, ATTENUATION, PROPAGATION, DATA  
PROCESSING, THRUST, UPPER ATMOSPHERE  
IDENTIFIERS: DOT/4DZ/DA, DOT/5B, DC-8  
AIRCRAFT

(U)

(U)

PHASE 2 OF THE 'AIRCRAFT NOISE DEFINITION'  
PROGRAM CONSISTED OF A DC-8-61 FLIGHT TEST PROGRAM  
WITH AN OBJECTIVE TO IMPROVE THE STATISTICAL ACCURACY  
OF THE NOISE DATA REPORTED IN PHASE 1 OF THE  
PROGRAM AND TO BROADEN THE DATA TO INCLUDE  
MEASUREMENTS AT LONG DISTANCES AND AT A THRUST  
REQUIRED FOR A STEEP APPROACH. NOISE MEASUREMENTS  
WERE MADE DURING FLYOVERS UP TO AN ALTITUDE OF 8000  
FEET, AT SIDELINE DISTANCES UP TO 8000 FEET AND AT  
TARGET THRUSTS OF 15,000, 10,000, 5000, 3200, AND  
2000 POUNDS. THIS DOCUMENT REPORTS THE DATA  
ACQUISITIONS, THE ANALYSIS PROCEDURE, AND THE RESULTS  
IN TERMS OF VARIATIONS IN REFERENCE-DAY EPNL AND  
A-WEIGHTED SOUND LEVEL WITH SLANT RANGE; OVERHEAD  
TO SIDELINE NOISE LEVEL RELATIONSHIP; AND DATA  
SHOWING LATERAL NOISE ATTENUATIONS. DATA ACCURACY  
IS DESCRIBED IN TERMS OF ASSIGNABLE CONFIDENCE  
LIMITS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A022 356 6/19 5/10 1/2  
MAN-ACOUSTICS AND NOISE INC SEATTLE WASH

REVIEW OF STUDIES INVESTIGATING HUMAN  
RESPONSE TO COMMERCIAL AIRCRAFT NOISE.

(U)

DESCRIPTIVE NOTE: FINAL REPT.

NOV 75 156P  
REPT. NO. MAN-1011B  
CONTRACT: DOT-FA74WAI-439  
MONITOR: FAA-RD 75-182

UNCLASSIFIED REPORT

DESCRIPTORS: \*STRESS(PHYSIOLOGY), \*AIRCRAFT  
NOISE, \*COMMERCIAL AIRCRAFT, \*NOISE,  
RESPONSE(BIOLOGY), HUMANS, REVIEWS,  
AIRPORTS, EXPERIMENTAL DATA, AUDITORY PERCEPTION,  
HEARING

(U)

IDENTIFIERS: \*NOISE POLLUTION, ENVIRONMENTAL  
HEALTH

(U)

THE REPORT REVIEWS EMPIRICAL STUDIES INVOLVING  
HUMAN RESPONSE TO COMMERCIAL AIRCRAFT/AIRPORT NOISE.  
THE REVIEW WAS LIMITED TO STUDIES THAT INVOLVED  
RESPONSE TO ACTUAL OR RECORDED FLYOVER SIGNALS OF  
CONVENTIONAL TAKEOFF AND LANDING (CTOL) AIRCRAFT.  
STUDY SUMMARIES ARE PROVIDED FOR THE STUDIES  
REVIEWED. THESE SUMMARIES INCLUDED STUDY AIM,  
NUMBER OF SUBJECTS, TYPE OF AIRCRAFT SIGNALS, AND  
RESULTS. STUDY METHODS IDENTIFIED WERE LABORATORY,  
FIELD STUDIES, SOCIAL SURVEY APPROACH, COMPLAINT  
STUDIES, DAMAGE RISK, INTERFERENCE TYPE STUDIES, AND  
COMBINATION METHODS. LABORATORY METHODS HAVE  
DOMINATED RESEARCH WORK IN THIS AREA AND WITH THE  
EXCEPTION OF THE SOCIAL SURVEY AND COMPLAINT METHODS,  
EMPHASIS HAS BEEN ON RESPONSE TO INDIVIDUAL FLYOVER  
EVENTS. A FEW RECENT STUDIES HAVE STUDIED RESPONSE  
TO NUMBER OF EVENTS OVER TIME, PARTICULARLY  
INTERFERENCE TYPE STUDIES. RESEARCH NEEDS ARE  
IDENTIFIED EMPHASIZING THE MORE REALISTIC METHODS  
WHICH INVESTIGATE HUMAN RESPONSE TO MULTIPLE EVENTS  
OVER TIME.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A022 911 20/1  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

COMMUNITY NOISE EXPOSURE RESULTING FROM  
AIRCRAFT OPERATIONS. APPENDIX: NOISEMAP  
PROGRAM OPERATOR'S MANUAL. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
FEB 76 29P REDDINGIUS, NICOLAAS H. ;  
REPT. NO. BBN-2946  
CONTRACT: F33615-75-C-5044  
PROJ: AF-7231  
TASK: 723104  
MONITOR: AMRL TR-73-108-APP

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: APPENDIX TO REPORT DATED JUL 74,  
AD-785 360.

DESCRIPTORS: \*AIRCRAFT NOISE, \*MILITARY FACILITIES,  
\*NOISE POLLUTION, \*COMPUTER PROGRAMMING,  
COMPUTERIZED SIMULATION, DIURNAL VARIATIONS, URBAN  
AREAS, AIRPORTS, RUNWAYS, FLIGHT PATHS,  
EXPOSURE(PHYSIOLOGY), VIBRATION,  
DIAGNOSIS(GENERAL), LAND USE, USER NEEDS,  
ENVIRONMENTAL IMPACT STATEMENTS, AIR FORCE  
OPERATIONS, AREA COVERAGE, FORTRAN, COMPUTER  
PROGRAMS, COMMUNITY RELATIONS (U)  
IDENTIFIERS: NOISEMAP COMPUTER PROGRAMS, GROUND  
RUNUP, NOISE EXPOSURE (U)

THIS REPORT DELINEATES THE PROGRAM OPERATOR CHANGES  
CONSISTENT WITH THE ADDITIONAL DEVELOPMENTS MADE ON  
THE COMPUTER PROGRAM DESCRIBED IN AMRL-TR-73-109  
(AD-A004 821). THE ADDED CAPABILITIES AND  
IMPROVED DIAGNOSTICS THAT FORM NOISEMAP 3.2 ARE  
DISCUSSED. NOISEMAP 3.2 IS USED AIR FORCE-WIDE  
TO COMPUTE COMMUNITY NOISE EXPOSURE FROM AIRCRAFT  
FLYING AND GROUND RUNUP OPERATIONS FOR PREPARING/  
ASSESSING CANDIDATE ENVIRONMENTAL IMPACT  
STATEMENTS AND PLANNING COMPATIBLE LAND USE IN THE  
VICINITY OF AIR INSTALLATIONS. IMPROVEMENTS MADE TO  
NOISEMAP INCLUDE: (1) OPTIONAL OUTPUTS IN  
TERMS OF DAY-NIGHT AVERAGE SOUND LEVEL, NOISE  
EXPOSURE FORECAST, AND THESE MEASURES WITH TONE  
CORRECTION AND GROUND RUNUP PENALTY WEIGHTINGS;  
(2) OPTIONAL CONTOUR PLOTTING ON A LINE PRINTER  
WHEN SOPHISTICATED CONTOUR PLOTTING SOFTWARE AND  
HARDWARE ARE NOT AVAILABLE; (3) OPTIONAL  
CAPABILITY TO PERFORM THE NOISE EXPOSURE COMPUTATIONS  
OVER LIMITED AREAS RATHER THAN THE ENTIRE AIRBASE (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A023 037 20/1 1/3  
BOEING CO WICHITA KANS WICHITA DIV

FAA JT3D QUIET NACELLE RETROFIT  
FEASIBILITY PROGRAM. VOLUME II. ADDENDUM  
A. MODEL AND FULL SCALE PLUG NOZZLE  
TESTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 74-MAR 75,  
APR 75 222P MAYER, J. E. ; LINSCHIED, L.  
L. ; VELDMAN, H. F. ;  
REPT. NO. D3-9042-6  
CONTRACT: DOT-FA71WA-2628  
MONITOR: FAA-RD 73-131-2-ADD-A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ADDENDUM A TO REPT. NO. D3-9042-  
3, DATED APR 74, AD-A012 969.

DESCRIPTORS: \*JET ENGINE NOISE, \*JET ENGINE  
NACELLES, \*NOISE REDUCTION, \*PLUG NOZZLES, \*JET  
TRANSPORT PLANES, RETROFITTING, NOISE POLLUTION,  
ACOUSTICS, MODEL TESTS, FULL SCALE SYSTEMS (U)  
IDENTIFIERS: \*QUIET NACELLES, T-3 ENGINES, JT-  
3D ENGINES, BOEING 707 AIRCRAFT (U)

PREVIOUS TESTS OF PLUG NOZZLES (DOCUMENTED IN  
VOLUME 2 OF THIS REPORT) RESULTED IN CONFLICTING  
EVIDENCE OF ACOUSTIC SUPPRESSION. MODEL SCALE PLUG  
NOZZLES PROVIDED SIGNIFICANT JET NOISE SUPPRESSION;  
LIMITED OR NO NOISE SUPPRESSION WAS OBSERVED DURING  
TESTS OF FULL SCALE PLUG NOZZLES. THE TESTS  
REPORTED IN THIS ADDENDUM WERE PERFORMED TO IDENTIFY  
THE REASON FOR NONCORRELATION BETWEEN MODEL AND FULL  
SCALE ACOUSTIC RESULTS. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A023 429 13/2 1/5 20/1  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

DEVELOPING NOISE EXPOSURE CONTOURS FOR  
GENERAL AVIATION AIRPORTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 75 203P BISHOP, DWIGHT E. ; HAYS,  
ANTHONY P. ;  
REPT. NO. BBN-2964  
CONTRACT: DOT-FA75WA-3710  
MONITOR: FAA-AS 75-1

UNCLASSIFIED REPORT

DESCRIPTORS: \*NOISE POLLUTION, \*AIRPORTS,  
\*AIRCRAFT NOISE, \*NOISE, CIVIL AVIATION,  
NOISE(SOUND), EXPOSURE(GENERAL), CONTOURS,  
DAY, NIGHT, FORECASTING, JET PLANE NOISE,  
PROPELLER NOISE

(U)

IDENTIFIERS: GENERAL AVIATION

(U)

THIS REPORT DESCRIBES A PROCEDURE FOR GENERATING  
NOISE CONTOURS AROUND GENERAL AVIATION AIRPORTS USING  
THREE UNITS OF NOISE EXPOSURE: COMPOSITE NOISE  
RATING (CNR), NOISE EXPOSURE FORECAST (NEF), AND  
DAY/NIGHT LEVELS (LDN). THE PROCEDURE IS TO  
DETERMINE THE NUMBER OF ANNUAL OPERATIONS AT AN  
AIRPORT, AND TO APPLY A WEIGHTING TO THIS NUMBER TO  
ACCOUNT FOR SUCH EFFECTS AS MULTI-ENGINE AND  
NIGHTTIME OPERATIONS; PROPELLER AND JET OPERATIONS  
ARE CONSIDERED SEPARATELY. A SERIES OF NOISE  
CONTOUR MAPS ARE PROVIDED IN THE REPORT FOR A WIDE  
RANGE OF NUMBERS OF ANNUAL OPERATIONS, BASED ON  
STANDARD FLIGHT TRACKS. THE APPROPRIATE MAPS SHOULD  
BE SELECTED (TAKING ACCOUNT OF MIXED PROPELLER AND  
JET OPERATIONS, MULTIPLE RUNWAY USAGE, ETC.)  
ENLARGED AND COMBINED BY LOGARITHMIC ADDITION OF  
NOISE EXPOSURE LEVELS TO PRODUCE AN OVERALL SET OF  
NOISE CONTOURS FOR THE AIRPORT. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A024 403 20/1  
NAVAL AIR ENGINEERING CENTER LAKEHURST N J GROUND SUPPORT  
EQUIPMENT DEPT

EXPERIMENTAL EVALUATION OF NAS MIRAMAR HUSH  
HOUSE (PROJECT P-114). VOLUME I. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
FEB 76 147P SULE, W. P. PULCHER, E.  
T. ;  
REPT. NO. NAEC-GSED-96-VOL-1  
PROJ: A534-534B/200-D/5W455-000

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A024  
404.

DESCRIPTORS: \*AIRCRAFT NOISE, \*AEROTHERMODYNAMICS,  
\*NOISE REDUCTION, \*SUPPRESSION, SCALE MODELS,  
DATA ACQUISITION, MODEL TESTS, TEST FACILITIES,  
ACOUSTIC DATA, RELIABILITY, TEST AND EVALUATION,  
ESTIMATES, GROUND SUPPORT EQUIPMENT (U)  
IDENTIFIERS: A-4 AIRCRAFT, F-8 AIRCRAFT, F-4  
AIRCRAFT, F-14 AIRCRAFT, HUSH HOUSE PROJECT (U)

THIS REPORT SUMMARIZES THE RESULTS OF AN EXTENSIVE  
EXPERIMENTAL TEST AND EVALUATION OF THE NEW NAS  
MIRAMAR HUSH HOUSE. THE TESTS CONSISTED OF  
BOTH AERO-THERMODYNAMIC AND ACOUSTIC DATA  
ACQUISITION. FOUR DIFFERENT AIRCRAFT (A-4, F-8,  
F-4, F-14) WERE RUN IN THE FACILITY AND  
ACOUSTIC DATA WAS OBTAINED ON TWO OF THE AIRCRAFT  
(F-4, F-14). THE RESULTS OF THE FULL SIZE  
TESTING WERE COMPARED WITH 1/15TH SCALE MODEL TESTS  
RESULTS TO ESTIMATE THE RELIABILITY OF SCALE MODEL  
TESTS FOR THIS APPLICATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A024 404 20/1  
NAVAL AIR ENGINEERING CENTER LAKEHURST N J GROUND SUPPORT  
EQUIPMENT DEPT

EXPERIMENTAL EVALUATION OF NAS MIRAMAR HUSH  
HOUSE (PROJECT P-114). VOLUME II, (U)

FEB 76 387P SULE, W. P. ; PULCHER, E.  
T. ;  
REPT. NO. NAEC-GSED-96-VOL-2  
PROJ: A534-534B/200-D/5W455-000

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A024  
403.

DESCRIPTORS: \*AIRCRAFT NOISE, \*AEROTHERMODYNAMICS,  
\*NOISE REDUCTION, \*SUPPRESSION, SOUND PRESSURE,  
ACOUSTIC DATA, ACOUSTIC MEASUREMENT, TEST AND  
EVALUATION, GROUND SUPPORT EQUIPMENT (U)  
IDENTIFIERS: HUSH HOUSE PROJECT, A-4 AIRCRAFT,  
F-8 AIRCRAFT, F-4 AIRCRAFT, F-14 AIRCRAFT (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A024 958 21/5 20/1 13/2 1/3  
TENNESSEE UNIV SPACE INST TULLAHOMA

INVESTIGATION OF FEASIBLE NOZZLE  
CONFIGURATIONS FOR NOISE REDUCTION IN  
TURBOFAN AND TURBOJET AIRCRAFT. VOLUME 1.  
SUMMARY AND MULTINOZZLE CONFIGURATIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 72-JUL 75,  
JUL 75 328P GOETHERT, B. H. ; MAUS, J.  
R. ; DUNHILL, WILLIAM A. ; BORCHERS, INGO U. ;  
CONTRACT: DOT-FA72WA-3053  
MONITOR: FAA-RD 75-162-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: INCLUDES ERRATA DATED 19 MAY 76.  
SEE ALSO VOLUME 2, AD-A024 959.

DESCRIPTORS: \*JET ENGINE NOISE, \*TURBOFAN ENGINES,  
\*TURBOJET ENGINES, \*NOISE REDUCTION, \*TURBOJET  
EXHAUST NOZZLES, \*AERODYNAMIC NOISE, VERTICAL  
TAKEOFF AIRCRAFT, SHORT TAKEOFF AIRCRAFT,  
FLAPS (CONTROL SURFACES), AERODYNAMIC SLOTS,  
CIRCULAR, MULTIMODE, LINEAR ARRAYS,  
CONFIGURATIONS, DUAL MODE, TEST FACILITIES,  
NOISE POLLUTION, SUPPRESSION, ATTENUATION,  
SUPERSONIC TRANSPORTS  
IDENTIFIERS: SLOT NOZZLES, SHROUDS

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THIS REPORT DESCRIBES THE MAJOR RESEARCH ACTIVITIES  
CARRIED OUT AND THE PRINCIPAL RESULTS OBTAINED DURING  
A THREE YEAR RESEARCH EFFORT BY THE UNIVERSITY OF  
TENNESSEE SPACE INSTITUTE FOR THE FEDERAL  
AVIATION ADMINISTRATION. THE MAJOR OBJECTIVE OF  
THIS RESEARCH WAS TO DEVELOP TECHNIQUES FOR REDUCING  
THE NOISE GENERATED BY HIGH VELOCITY JET STREAMS  
EXHAUSTING FROM A WIDE VARIETY OF NOZZLE  
CONFIGURATION. IN ADDITION TO EXPLORING TECHNIQUES  
FOR NOISE SUPPRESSION AND/OR REDIRECTION, EMPHASIS  
WAS PLACED ON INVESTIGATING THE PHYSICAL MECHANISMS  
AT WORK IN GENERATION, SUPPRESSION, AND REDIRECTION  
OF AERODYNAMIC NOISE. THE REPORT CONSISTS OF THREE  
VOLUMES AND IS DIVIDED INTO SEVERAL SECTIONS EACH  
DEALING WITH A SEPARATE PART OF THE RESEARCH EFFORT.  
THIS VOLUME CONTAINS AN OVERALL SUMMARY OF THE  
WORK, A DESCRIPTION OF THE FACILITIES USED AND A  
DESCRIPTION OF THE RESULTS OBTAINED ON LINEAR ARRAYS  
OF CIRCULAR NOZZLES AND DUAL NOZZLES WITH SHROUDS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A024 959 21/5 20/1 13/2 1/3  
TENNESSEE UNIV SPACE INST TULLAHOMA

INVESTIGATION OF FEASIBLE NOZZLE  
CONFIGURATIONS FOR NOISE REDUCTION IN  
TURBOFAN AND TURBOJET AIRCRAFT. VOLUME II.  
SLOT NOZZLE CONFIGURATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 72-JUL 75,  
JUL 75 341P GOETHERT, B. H. ; MAUS, J.  
R. ; DUNHILL, WILLIAM A. ; PATTERSON, GRANT T. ;  
JOSHI, MAHENDRA C. ;  
CONTRACT: DOT-FA72WA-3053  
MONITOR: FAA-RD 75-162-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: INCLUDES ERRATA DATED 19 MAY 76.  
SEE ALSO VOLUME 1, AD-A024 958.

DESCRIPTORS: \*JET ENGINE NOISE, \*TURBOFAN ENGINES,  
\*TURBOJET ENGINES, \*NOISE REDUCTION, \*TURBOJET  
EXHAUST NOZZLES, \*AERODYNAMIC NOISE, VERTICAL  
TAKEOFF AIRCRAFT, SHORT TAKEOFF AIRCRAFT,  
FLAPS (CONTROL SURFACES), TWO DIMENSIONAL,  
AERODYNAMIC SLOTS, CONFIGURATIONS, FLUID DYNAMICS,  
NOISE POLLUTION, SUPPRESSION, ATTENUATION,  
ACOUSTICS, MODELS, MATHEMATICAL MODELS,  
LITERATURE SURVEYS

(U)

IDENTIFIERS: \*SLOT NOZZLES

(U)

THIS VOLUME CONTAINS A DESCRIPTION OF RESULTS  
OBTAINED FOR TWO DIMENSIONAL RECTANGULAR SLOT NOZZLES  
WITHOUT AND WITH STRAIGHT ATTACHED FLAPS. THREE  
APPENDICES ARE INCLUDED IN THIS VOLUME CONTAINING  
RESULTS OF OTHER RESEARCH ACTIVITIES.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A025 979 20/1 14/2  
ARMY AIR MOBILITY RESEARCH AND DEVELOPMENT LAB MOFFETT  
FIELD CALIF

IN-FLIGHT FAR-FIELD MEASUREMENT OF  
HELICOPTER IMPULSIVE NOISE,

(U)

76 15P BOXWELL, DONALD A. ; SCHMITZ,  
FREDRIC H. ;

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*IMPULSE NOISE,  
HELICOPTERS, ROTOR BLADES (ROTARY WINGS),  
ACOUSTIC SIGNATURES, FLIGHT TESTING, FAR FIELD,  
ACOUSTIC DATA, HELICOPTER ROTORS, INFLIGHT,  
EXPERIMENTAL DESIGN, RADIATED NOISE, DIRECTIONAL,  
LOW FREQUENCY, FLIGHT MANEUVERS, VORTICES,  
AERODYNAMIC LOADING, FLIGHT PATHS, DESCENT,  
AIRSPEED, HIGH VELOCITY  
IDENTIFIERS: H-1 AIRCRAFT, UH-1H AIRCRAFT-1,  
BLADE SLAP, BLADE TIPS

(U)

(U)

AN IN-FLIGHT TECHNIQUE FOR MEASURING UH-1H  
HELICOPTER IMPULSIVE NOISE (SOMETIMES CALLED 'BLADE  
SLAP') BY STATIONKEEPING WITH A QUIET INSTRUMENTED  
LEAD AIRCRAFT WAS FOUND TO BE HIGHLY SUCCESSFUL.  
FAR-FIELD QUANTITATIVE ACOUSTIC WAVEFORMS AND  
RADIATION PATTERNS WERE EASILY OBTAINED OVER A WIDE,  
CONTINUOUS RANGE OF UH-1H FLIGHT CONDITIONS,  
INCLUDING SEVERAL AREAS KNOWN TO PRODUCE ANNOYING  
ACOUSTIC RADIATION. THE DATA COLLECTED USING THIS  
TECHNIQUE WERE NOT (TO ANY SIGNIFICANT DEGREE)  
CONTAMINATED BY TRANSMISSION PATH DISTORTIONS THAT  
HAVE HINDERED MEASUREMENT EFFORTS IN THE PAST. THE  
TWO MAJOR FINDINGS OF THIS INITIAL MEASUREMENT PROGRAM  
WERE: (1) JUDGING THE OCCURRENCE AND  
SEVERITY OF A HELICOPTER'S RADIATED IMPULSIVE NOISE  
SIGNATURE FROM CABIN-BASED NOISE MEASUREMENTS CAN BE  
MISLEADING. FOR THE UH-1H HELICOPTER, REDUCTION  
IN CABIN AUDIBLE IMPULSIVE NOISE LEVELS MAY  
CONSTITUTE A NECESSARY BUT CERTAINLY NOT SUFFICIENT  
TO INDICATE THAT FAR-FIELD IMPULSIVE NOISE RADIATION  
HAS BEEN REDUCED. THE FOLLOWING THREE DISTINCT  
TYPES OF IMPULSIVE NOISE ARE RADIATED BY THE UH-  
1H HELICOPTER WHILE FLYING BETWEEN 80 AND 115 KNOTS  
AT DESCENT RATES FROM ZERO TO 1000 FT/MIN: (A)  
A SERIES OF POSITIVE PRESSURE PULSES BELIEVED TO BE  
RELATED TO BLADE-TIP VORTEX INTERACTION. THESE  
PULSES ARE RESPONSIBLE FOR THE CRISP POPPING SOUND OF  
THE RADIATED NOISE;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A025 982 20/1

ARMY AIR MOBILITY RESEARCH AND DEVELOPMENT LAB HAMPTON VA  
LANGLEY DIRECTORATE

A NEW CAPABILITY FOR PREDICTING HELICOPTER  
ROTOR NOISE IN HOVER AND IN FLIGHT, (U)

76 14P BROWN, THOMAS J. FARASSAT,  
FEREIDOUN ;  
CONTRACT: NGR-09-010-085

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*HELICOPTER ROTORS,  
\*PROPELLER NOISE, MATHEMATICAL PREDICTION,  
RADIATED NOISE, COMPUTER PROGRAMS, HOVERING,  
INFLIGHT, ROTOR BLADES (ROTARY WINGS),  
AERODYNAMIC LOADING, HIGH VELOCITY, ACOUSTIC  
SIGNATURES, SOUND PRESSURE, MATHEMATICAL MODELS (U)  
IDENTIFIERS: BLADE TIPS (U)

THIS PAPER DISCUSSES A NEW THEORY AND A COMPUTER PROGRAM FOR REALISTIC CALCULATION OF ACOUSTIC PRESSURE SIGNATURE AND SPECTRUM OF ROTOR AND PROPELLER NOISE. MANY OF THE COMMON RESTRICTIONS OF ALREADY EXISTING THEORIES ARE REMOVED BY USING THE NEW THEORY WHICH IS CONSISTENT WITH ALL PREVIOUS THEORIES. ONLY DETERMINISTIC PRESSURE FLUCTUATIONS MAY BE USED IN THE PROGRAM AT THIS STAGE OF DEVELOPMENT. THIS WILL LIMIT THE APPLICABILITY OF THE PROGRAM TO RELATIVELY HIGH TIP SPEEDS WHERE IT IS KNOWN THAT HIGH FREQUENCY UNSTEADY PRESSURE FLUCTUATIONS DO NOT CONTRIBUTE SIGNIFICANTLY TO THE SOUND LEVEL. THERE ARE VERY FEW BLADE SURFACE PRESSURE MEASUREMENTS AND RELIABLE ACOUSTIC DATA AVAILABLE TO TEST THE THEORY IN FULL. COMPARISON WITH THE MEASURED ACOUSTIC DATA OF A HIGH-SPEED PROPELLER BY HUBBARD AND LASSITER, USING LIMITED AERODYNAMIC DATA IN THE BLADE TIP REGION FOR ACOUSTIC CALCULATIONS, HAS SHOWN GOOD AGREEMENT SO FAR. ONE IMPORTANT CONTRIBUTION OF THE NEW THEORY IS BELIEVED TO BE THE REMOVAL OF THE COMPACTNESS ASSUMPTION WHICH CAN INTRODUCE ERRORS IN ACOUSTIC COMPUTATIONS. THE NEW CAPABILITY WILL BE USED TO STUDY THIS EFFECT. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A026 209 1/5 20/1 13/2  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

TEST PLAN FOR AIRCRAFT RUNUP NOISE  
PENALTY EVALUATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAR 76 39P FIDELL, SANFORD ;  
REPT. NO. BBN-2941  
CONTRACT: F33615-75-C-5044  
PROJ: AF-7231  
TASK: 723104  
MONITOR: AMRL TR-75-110

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*AIRPORTS, \*NOISE  
POLLUTION, MILITARY FACILITIES, MILITARY AIRCRAFT,  
ATTITUDES(PSYCHOLOGY), SURVEYS, COMMUNITIES,  
COMMUNITY RELATIONS, THRESHOLDS(PHYSIOLOGY),  
QUESTIONNAIRES, AIRCRAFT MAINTENANCE, ACOUSTICS  
IDENTIFIERS: \*AIRPORT PLANNING

(U)

(U)

THIS REPORT OUTLINES A TEST PLAN FOR CONDUCTING A  
SOCIAL SURVEY TO DETERMINE WHETHER COMMUNITY RESPONSE  
TO NOISE FROM MILITARY AIRCRAFT OPERATIONS DIFFERS  
SIGNIFICANTLY BETWEEN NOISE FROM FLIGHT OPERATIONS  
AND NOISE FROM GROUND RUNUP (MAINTENANCE)  
OPERATIONS. THE REPORT INCLUDES DISCUSSION OF THE  
METHODOLOGY AND RATIONALE FOR THE SURVEY AS WELL AS  
SAMPLE TELEPHONE AND MAIL QUESTIONNAIRES.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A026 535 20/1 13/2 1/3  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

SENSITIVITY STUDIES OF COMMUNITY-AIRCRAFT  
NOISE EXPOSURE (NOISEMAP) PREDICTION  
PROCEDURE,

(U)

MAR 76 123P BISHOP, DWIGHT E. ;  
DUNDERDALE, TOM C. ; HORONJEFF, RICHARD D. ;  
MILLS, JOHN F. ;  
REPT. NO. BBN-2956  
CONTRACT: F33615-75-C-5044  
PROJ: AF-7231  
TASK: 723104  
MONITOR: AMRL TR-75-115

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED AUG 75, AD-  
A017 741.

DESCRIPTORS: \*AIRCRAFT NOISE, \*COMMUNITY RELATIONS,  
NOISE POLLUTION, EXPOSURE(GENERAL), MODELS,  
MATHEMATICAL PREDICTION, COMPUTER APPLICATIONS,  
AIRPORTS, SENSITIVITY, LEVEL(QUANTITY), AIR  
FORCE RESEARCH, NOISE REDUCTION  
IDENTIFIERS: NOISEMAP, NOISE LEVELS, \*NOISE  
EXPOSURE

(U)

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THIS REPORT DESCRIBES A PRELIMINARY STUDY OF THE  
SENSITIVITY OF NOISE EXPOSURE CONTOURS TO VARIOUS  
AIRCRAFT NOISE MODELING PARAMETERS AND ASSUMPTIONS.  
THE STUDY IS THE FIRST STEP IN A CONTINUING  
TECHNICAL ASSESSMENT OF THE AIR FORCE COMMUNITY-  
AIRCRAFT NOISE EXPOSURE (NOISEMAP) PREDICTION  
PROCEDURE. THE RESULTS INDICATE THAT THE ADDITION  
OF A TONE CORRECTION TO THE NOISE MEASURE CAN RESULT  
IN APPRECIABLE INCREASE IN NOISE EXPOSURE AREAS, BUT  
THE INCREASE IS HIGHLY DEPENDENT ON THE TYPE OF  
AIRCRAFT OPERATIONS. COMPUTATION OF CONTOUR AREAS  
FOR NINE BASES WITH AND WITHOUT THE GROUND RUNUP  
PENALTY SHOWED HOW THE PERCENT OF AREA IMPACTED  
INCREASED WITH INCREASING NOISE EXPOSURE LEVEL. USE  
OF ALTERNATE ALGORITHMS FOR GROUND-TO-GROUND  
PROPAGATION AND TRANSITIONS FOR AIR-TO-GROUND AND  
GROUND-TO-GROUND SITUATIONS IS DISCUSSED.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A027 363 1/3 20/1 9/2  
UNITED TECHNOLOGIES CORP WINDSOR LOCKS CONN HAMILTON  
STANDARD DIV

V/STOL ROTARY PROPULSION SYSTEMS - NOISE  
PREDICTION AND REDUCTION. VOLUME III.  
COMPUTER PROGRAM USER'S MANUAL.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 76 300P MAGLIOZZI, B. ;  
CONTRACT: DOT-FA74WA-3477  
MONITOR: FAA-RD 76-49-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A027  
389.

DESCRIPTORS: \*VERTICAL TAKEOFF AIRCRAFT, \*SHORT  
TAKEOFF AIRCRAFT, \*PROPULSION SYSTEM COMPONENTS,  
\*AIRCRAFT NOISE, \*COMPUTER PROGRAMS, USER NEEDS,  
INSTRUCTION MANUALS, PREDICTIONS, AIRCRAFT ENGINE  
NOISE, PROPELLER NOISE, LIFT FANS, JET ENGINE  
NOISE, NOISE REDUCTION, NOISE POLLUTION,  
HELICOPTERS

(U)

A COMPUTER PROGRAM IS PRESENTED WHICH ALLOWS A USER  
TO MAKE PERFORMANCE AND FAR-FIELD ACOUSTIC NOISE  
PREDICTIONS FOR FREE-AIR PROPELLERS, VARIABLE PITCH  
FANS WITH INLET GUIDE VANES, VARIABLE PITCH FANS WITH  
OUTLET GUIDE VANES, FIXED PITCH FANS, HELICOPTER  
ROTORS, TILT ROTORS, FIXED PITCH LIFT VANES WITH  
REMOTE, INTEGRAL, AND TIP-TURBINE DRIVES, AND  
VARIABLES PITCH LIFT FANS WITH REMOTE AND INTEGRAL  
DRIVES. NOISE PREDICTION METHODOLOGY FOR DRIVE  
ENGINES, SINGLE STREAM AND COAXIAL JETS, AND  
GEARBOXES ARE ALSO INCLUDED, AS WELL AS NOISE  
REDUCTION AND PERFORMANCE LOSSES OF PARTLY SONIC  
INLETS AND DUCT ACOUSTIC TREATMENT. A DESCRIPTION  
OF THE PROGRAM, DETAILED INSTRUCTIONS FOR ITS USE,  
REQUIRED INPUTS, AND SAMPLE CASES ARE PRESENTED.  
RELATED DOCUMENTS INCLUDE VOLUME 1 -  
IDENTIFICATION OF SOURCES, NOISE GENERATING  
MECHANISMS, NOISE REDUCTION MECHANISMS, AND  
PREDICTION METHODOLOGY AND VOLUME 2 -  
GRAPHICAL PREDICTION METHODS. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A027 389 1/3 20/1  
UNITED TECHNOLOGIES CORP WINDSOR LOCKS CONN HAMILTON  
STANDARD DIV

V/STOL ROTARY PROPULSION SYSTEMS NOISE  
PREDICTION AND REDUCTION. VOLUME I.  
IDENTIFICATION OF SOURCES, NOISE GENERATING  
MECHANISMS, NOISE REDUCTION MECHANISMS, AND  
PREDICTION METHODOLOGY.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 76 145P MAGLIOZZI, B. ;  
CONTRACT: DOT-FA74WA-3477  
MONITOR: FAA-RD 76-49.1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A027  
390.

DESCRIPTORS: \*VERTICAL TAKEOFF AIRCRAFT, \*SHORT  
TAKEOFF AIRCRAFT, \*PROPULSION SYSTEM COMPONENTS,  
\*AIRCRAFT NOISE, AIRCRAFT ENGINE NOISE, PROPELLER  
NOISE, LIFT FANS, NOISE GENERATORS, JET ENGINE  
NOISE, NOISE REDUCTION, NOISE POLLUTION

(U)

THE PROPULSION SYSTEMS OF CURRENT AND FUTURE V/  
STOL VEHICLES CAN BE DEFINED AS COMBINATIONS OF  
FREE-AIR PROPELLERS, SHROUDED PROPELLERS, VARIABLE  
PITCH FANS, FIXED PITCH FANS, TILT ROTORS, HELICOPTER  
ROTORS, LIFT FANS, GEARBOXES, AND DRIVE ENGINES. IN  
THIS REPORT, NOISE SOURCES FOR EACH OF THESE  
PROPULSORS, GEARBOXES, AND DRIVE ENGINES ARE  
IDENTIFIED AND RANK ORDERED. THE NOISE GENERATING  
MECHANISMS FOR EACH OF THE PROPULSOR NOISE SOURCES  
IDENTIFIED ARE DEFINED AND SYSTEMATICALLY CATALOGUED.  
THREE APPROACHES TO REDUCTION OF PROPULSOR NOISE  
ARE DISCUSSED: CHANGES IN PHYSICAL GEOMETRY,  
CHANGES IN DESIGN OPERATING CONDITIONS, AND THE USE  
OF ACOUSTIC TREATMENTS. COMPUTERIZED AND GRAPHICAL  
PROCEDURES BASED ON METHODOLOGY FROM THE OPEN  
LITERATURE AND AT UNITED TECHNOLOGIES CORP.,  
ARE PRESENTED FOR PREDICTING AERODYNAMIC PERFORMANCE  
OF AND NOISE FROM THE V/STOL PROPULSORS  
IDENTIFIED IN THIS STUDY. THE DEVELOPED METHODOLOGY  
ALLOWS THE USER TO ESTIMATE THE ACHIEVED NOISE  
REDUCTION AS WELL AS THE INCURRED PERFORMANCE  
PENALTIES OF NOISE REDUCTION DESIGN FEATURES AND  
NOISE ATTENUATION DEVICES SUCH AS PARTLY SONIC INLETS  
AND ACOUSTIC TREATMENT. IT IS SHOWN THAT MUCH OF  
THE NOISE GENERATING MECHANISM SUBSTANTIATION DATA  
AND PREDICTION METHODOLOGY ARE BASED ON STATIC

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A027 390 1/3 20/1  
UNITED TECHNOLOGIES CORP WINDSOR LOCKS CONN HAMILTON  
STANDARD DIV

V/STOL ROTARY PROPULSION SYSTEMS NOISE  
PREDICTION AND REDUCTION. VOLUME II.  
GRAPHICAL PREDICTION METHODS.

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DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 76 299P MAGLIOZZI, B. ;  
CONTRACT: DOT-FA74WA-3477  
MONITOR: FAA-RD 76-49.2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A027  
389.

DESCRIPTORS: \*VERTICAL TAKEOFF AIRCRAFT, \*SHORT  
TAKEOFF AIRCRAFT, \*PROPULSION SYSTEM COMPONENTS,  
\*AIRCRAFT NOISE, AIRCRAFT ENGINE NOISE, PROPELLER  
NOISE, LIFT FANS, NOISE GENERATORS, JET ENGINE  
NOISE, NOISE REDUCTION, NOISE POLLUTION,  
PREDICTIONS  
IDENTIFIERS: \*GRAPHIC METHODS

(U)  
(U)

GRAPHICAL PROCEDURES FOR ESTIMATING NOISE AND  
PERFORMANCE OF FREE-AIR PROPELLERS, VARIABLE PITCH  
FANS WITH INLET GUIDE VANES, VARIABLE PITCH FANS WITH  
OUTLET GUIDE VANES, FIXED PITCH FANS, HELICOPTER  
ROTORS, TILT ROTORS, AND LIFT FANS ARE PRESENTED.  
NOISE PREDICTION METHODS FOR DRIVE ENGINES,  
GEARBOXES, JETS WITH AND WITHOUT BYPASS FLOW, AS WELL  
AS NOISE REDUCTION AND PERFORMANCE LOSSES FOR PARTLY  
SONIC INLETS AND DUCT LININGS ARE ALSO PRESENTED.  
THESE GRAPHICAL METHODS ARE PARALLEL TO THOSE  
DEVELOPED FOR THE COMPUTER PROGRAM DISCUSSED IN  
VOLUME 3 OF THIS REPORT TO THE EXTENT POSSIBLE  
WITHOUT THEIR BECOMING TOO INVOLVED AND TEDIOUS TO  
USE. THE PROCEDURES ARE EXTENSIVE AND APPLICABLE TO  
A WIDE VARIETY OF V/STOL PROPULSOR SYSTEMS,  
INCLUDING PRESENT AND FUTURE V/STOL VEHICLES.  
THE METHODS HAVE BEEN VALIDATED WITH AVAILABLE DATA  
WHEREVER POSSIBLE. HOWEVER, HIGH QUALITY DATA FOR  
ISOLATED PROPULSORS WHICH IS FREE FROM CONTAMINATION  
BY OTHER SOURCES AND GROUND REFLECTIONS IS SOMEWHAT  
LIMITED, PARTICULARLY FOR FORWARD FLIGHT  
CONDITIONS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A027 638 20/1 21/7 1/3  
AIR FORCE FLIGHT DYNAMICS LAB WRIGHT-PATTERSON AFB  
OHIO

MINI RPV ENGINE NOISE REDUCTION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAY 74-AUG 75,  
MAR 76 97P SHIMOVETZ, RALPH M. ; SMITH,  
DAVEY L. ;  
REPT. NO. AFFDL-TR-76-28  
CONTRACT: ARPA ORDER-2707  
PROJ: AF-2707  
TASK: 270750

UNCLASSIFIED REPORT

DESCRIPTORS: \*REMOTELY PILOTED VEHICLES, \*ROTARY  
COMBUSTION ENGINES, \*RECIPROCATING ENGINES,  
\*AIRCRAFT ENGINE NOISE, DETECTION, NOISE  
REDUCTION, HEARING

(U)

IDENTIFIERS: MINI-REMOTELY PILOTED VEHICLES,  
PRAEIRE AIRCRAFT, CALERE AIRCRAFT

(U)

THE PURPOSE OF THIS EFFORT WAS TO INVESTIGATE THE  
REDUCTION IN RADIATED ACOUSTIC NOISE ASSOCIATED WITH  
TWO TYPES OF ENGINES CONSIDERED FOR POWER PLANTS IN  
SMALL (75-100 LB.) REMOTELY PILOTED VEHICLES  
(MINI RPV) IN THE CLASS OF THE PRAEIRE AND  
CALERE AIRCRAFT. THE TWO ENGINES CONSIDERED ARE  
APPROXIMATELY 5 HP; THE FIRST A ROTARY COMBUSTION  
(RC), THE SECOND A TWO STROKE CYCLE RECIPROCATING  
(P). THE SOUND PRESSURE LEVELS WERE RECORDED  
USING A SEMICIRCLE ARRANGEMENT OF MICROPHONES IN A  
FREE FIELD AND WITH VARIOUS ENGINE NOISE REDUCTION  
DEVICES INSTALLED. THE ENGINES WERE ROTATED SUCH  
THAT A SPHERICAL DEFINITION OF THE ACOUSTIC PRESSURES  
WERE MADE. FROM THESE DATA THE SOUND POWER LEVELS  
AND DIRECTIONAL CHARACTERISTICS WERE DETERMINED.  
AURAL DETECTION ANALYSES ARE PERFORMED FOR THE MOST  
DESIRABLE NOISE REDUCTION CASES. THE COMPUTED  
AURAL DETECTION ALTITUDES AND THE MOST SIGNIFICANT  
SOURCES OF NOISE WERE DEFINED. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A028 511 1/5 13/2  
TRACOR SCIENCES AND SYSTEMS AUSTIN TEX

AIRPORT NOISE MONITORING SYSTEMS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 74-NOV 75 ON TASK

A,

NOV 75 279P COOPER, B. K. EDMISTON,

RICHARD D. I

REPT. NO. TRACOR-T75-AU-9531-U

CONTRACT: DOT-FA74WA-3539

MONITOR: FAA-RD 75-216

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRPORTS, \*AIRCRAFT NOISE, \*ACOUSTIC  
MEASUREMENT, ACOUSTIC EMISSIONS, ACOUSTIC RECORDING  
SYSTEMS, REMOTE SYSTEMS, DATA PROCESSING, NOISE  
POLLUTION, NOISE REDUCTION, COMMERCIAL AVIATION

(U)

THE PURPOSE OF THIS STUDY WAS TO SELECT AND  
EVALUATE THE TEN MOST COMPREHENSIVE AIRCRAFT NOISE  
MEASUREMENT SYSTEMS IN THE FREE WORLD. FIVE  
U.S. AND FIVE EUROPEAN SYSTEMS WERE VISITED AND  
STUDIED. THESE WERE INSTALLED BY VARIOUS SUPPLIERS  
IN THE PERIOD 1970-1975. FOR EACH SYSTEM, THIS  
REPORT PRESENTS A DESCRIPTION OF REMOTE MONITOR  
STATION EQUIPMENT, CENTRAL STATION EQUIPMENT, DATA  
PROCESSING AND OUTPUT, STAFFING AND COSTS FOR  
INSTALLATION AND OPERATION, AND ASSOCIATED NOISE  
ABATEMENT PROGRAM. THERE IS A WIDE DIVERSITY IN  
UTILIZATION OF SYSTEMS HAVING THE SAME BASIC  
HARDWARE. ALSO PRESENTED ARE COMPARATIVE  
EVALUATIONS OF THE SYSTEMS AND ASSOCIATED EQUIPMENT  
AND DISCUSSIONS OF THE APPLICATION OF MONITORING  
SYSTEMS TO AIRPORT NOISE ABATEMENT.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A028 765 20/1 1/3  
LOCKHEED-GEORGIA CO MARIETTA

V/STOL AIRCRAFT NOISE PREDICTION (JET  
PROPULSORS).

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 74-JUN 75,  
JUN 75 327P REDDY, N. N. ; BLAKNEY, D.  
F. ; TIBBETS, J. G. ; GIBSON, J. S. ;  
REPT. NO. LG75ER0054  
CONTRACT: DOT-FA72WA-3099  
MONITOR: FAA-RD 75-125

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED AUG 73,  
AD-774 794.

DESCRIPTORS: \*JET PLANE NOISE, \*SHORT TAKEOFF  
AIRCRAFT, \*NOISE REDUCTION, THRUST VECTOR CONTROL  
SYSTEMS, AERODYNAMIC CONTROL SURFACES, MATHEMATICAL  
PREDICTION, COMPUTER PROGRAMS, AERODYNAMIC NOISE,  
JET ENGINE NOISE, HIGH LIFT

(U)

IDENTIFIERS: \*BLOWN FLAPS, \*AUGMENTOR WINGS

(U)

A COMPUTER PROGRAM IS PRESENTED FOR PREDICTING THE  
NOISE LEVELS OF V/STOL AIRCRAFT WITH JET-  
PROPULSIVE-LIFT SYSTEMS. USING THE EQUATIONS  
DEVELOPED IN PART I OF THIS REPORT THE NOISE  
LEVELS MAY ALSO BE ESTIMATED WITH HAND CALCULATIONS.  
VECTORED THRUST, EXTERNALLY BLOWN FLAP, UPPER  
SURFACE BLOWN FLAP, INTERNALLY BLOWN FLAP, AND  
AUGMENTOR WING ARE THE PROPULSIVE-LIFT CONCEPTS  
CONSIDERED. SEMI-EMPIRICAL EQUATIONS ARE DERIVED  
USING THE TEST RESULTS AND THEORIES FOR THE FOLLOWING  
AIRCRAFT NOISE SOURCES: INTERNAL ENGINE, JET,  
EXCESS (CORE ENGINE), HIGH-LIFT SYSTEM, AIRFRAME,  
AND AUXILIARY POWER UNIT. THE COMPUTER PROGRAM  
PREDICTS THE PERCEIVED NOISE LEVELS AND TONE  
CORRECTED PERCEIVED NOISE LEVELS FOR V/STOL  
AIRCRAFT AT ANY SPECIFIED SIDELINE DISTANCE FOR KNOWN  
GEOMETRICAL AND OPERATIONAL PARAMETERS. THIS  
REPORT SUPERSEDES THE EARLIER REPORT NO. FAA-  
RD-73-145, AUGUST 1973. (AUTHOR)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 575 20/1 21/5  
TEXAS UNIV AT AUSTIN APPLIED RESEARCH LABS

NONLINEAR PROPAGATION DISTORTION OF JET  
NOISE.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
NOV 75 12P BLACKSTOCK, DAVID T. ;  
CONTRACT: F44620-71-C-0015  
PROJ: AF-9781  
TASK: 978102  
MONITOR: AFOSR TR-76-0976

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN PROCEEDINGS OF INTERAGENCY  
SYMPOSIUM ON UNIVERSITY RESEARCH IN TRANSPORTATION  
NOISE (3RD), SALT LAKE CITY, UTAH, 12-14 NOV  
75 P1-9 N.D. SPONSORED IN PART BY DEPARTMENT OF  
TRANSPORTATION, WASHINGTON, D.C.

DESCRIPTORS: \*JET ENGINE NOISE, \*ACOUSTIC FIELDS,  
DISTORTION, SOUND TRANSMISSION, PLANE WAVES,  
SPECTRUM ANALYSIS, NOISE POLLUTION, NONLINEAR  
SYSTEMS, SPECTRUM SIGNATURES  
IDENTIFIERS: \*JET NOISE, NONLINEAR ACOUSTICS

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(U)

A PREVIOUS THEORETICAL AND EXPERIMENTAL STUDY OF  
INTENSE BROADBAND NOISE IN A TUBE SHOWED THAT  
PROPAGATION DISTORTION IS SIGNIFICANT FOR PLANE WAVES  
AT SOUND PRESSURE LEVELS ENCOUNTERED IN JET NOISE  
FIELDS. A COMPUTER PROGRAM WAS LATER MODIFIED TO  
ACCOUNT FOR SPHERICAL SPREADING. IN THE STUDY  
REPORTED HERE, MEASURED NOISE NEAR ACTUAL JETS WAS  
USED AS THE INPUT FOR THE PROGRAM. THE DISTORTION  
THAT IS EXPECTED TO OCCUR DURING SUBSEQUENT  
PROPAGATION WAS COMPUTED. COMPUTATIONS WERE MADE  
FOR NOISE FROM A MODEL SUPERSONIC JET AND FROM A  
T38 AIRCRAFT. IN BOTH CASES THE COMPUTED  
WAVEFORMS EXHIBIT SHOCKS AND OTHER EVIDENCE OF  
NONLINEAR EFFECTS AT MODERATE DISTANCES. HOWEVER,  
THE MODEL DOES NOT INCLUDE ATMOSPHERIC ATTENUATION  
AND METEOROLOGICAL EFFECTS, GROUND REFLECTION AND  
ABSORPTION, AND EFFECTS DUE TO THE COMPLICATED NATURE  
OF THE JET SOURCE ITSELF. AN OUTDOOR PROPAGATION  
EXPERIMENT USING NOISE FROM A CONVENTIONAL SOUND  
SOURCE IS PLANNED FOR THE FUTURE.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A029 605 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 31. B-52H IN-FLIGHT CREW  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 75 16P FARINACCI, NICK A. ; COLE,  
JOHN N. ; MOHLMAN, HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-31  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 32, AD-A029  
606.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, FLIGHT CREWS, INFLIGHT,  
NOISE(SOUND), BOMBER AIRCRAFT, SOUND PRESSURE,  
INTERFERENCE, EXPOSURE(PHYSIOLOGY), EAR  
PROTECTORS, VOICE COMMUNICATIONS

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, B-52  
AIRCRAFT, B-52H AIRCRAFT

(U)

THE B-52H IS A USAF STRATEGIC HEAVY BOMBER  
AIRCRAFT. THIS REPORT PROVIDES MEASURED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW/  
PASSENGER LOCATIONS INSIDE THIS AIRCRAFT DURING  
NORMAL FLIGHT OPERATIONS. DATA ARE REPORTED FOR 9  
LOCATIONS IN A WIDE VARIETY OF PHYSICAL AND  
PSYCHOACOUSTIC MEASURES: OVERALL AND BAND SOUND  
PRESSURE LEVELS, C-WEIGHTED AND A-WEIGHTED SOUND  
LEVELS, PREFERRED SPEECH INTERFERENCE LEVEL,  
PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR TOTAL  
DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT STANDARD  
AIR FORCE EAR PROTECTORS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 606 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 32. KC-135A IN-FLIGHT CREW  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 75 25P FARINACCI, NICK A. ; COLE,  
JOHN N. ; MOHLMAN, HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-32  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 33, AD-A029  
607.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, FLIGHT CREWS, INFLIGHT,  
NOISE(SOUND), SOUND PRESSURE, INTERFERENCE,  
EXPOSURE(PHYSIOLOGY), EAR PROTECTORS, VOICE  
COMMUNICATIONS, TRANSPORT AIRCRAFT, TANKER PLANES (U)  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, KC-135  
AIRCRAFT, C-135 AIRCRAFT (U)

THE KC-135A IS THE STANDARD USAF TANKER-  
TRANSPORT AIRCRAFT WITH HIGH-SPEED HIGH-ALTITUDE  
REFUELING AND LONG-RANGE TRANSPORT CAPABILITY. THIS  
REPORT PROVIDES MEASURED DATA DEFINING THE  
BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW/PASSENGER  
LOCATIONS INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR 15 LOCATIONS IN A  
WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 607 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 33. C-131B IN-FLIGHT CREW  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 75 13P FARINACCI, NICK A. ; COLE,  
JOHN N. ; MOHLMAN, HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-50-VOL-33  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 34, AD-A029  
608.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, FLIGHT CREWS, INFLIGHT,  
NOISE(SOUND), SOUND PRESSURE, INTERFERENCE,  
EXPOSURE(PHYSIOLOGY), EAR PROTECTORS, VOICE  
COMMUNICATIONS, TRANSPORT AIRCRAFT, PASSENGER  
AIRCRAFT

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, C-131  
AIRCRAFT, C-131B AIRCRAFT

(U)

THE C-131B IS A USAF TRANSREPORT/PASSENGER  
AIRCRAFT WHICH CAN BE USED AS A FLYING LABORATORY.  
THIS REPORT PROVIDES MEASURED DATA DEFINING THE  
BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW/PASSENGER  
LOCATIONS INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR 9 LOCATIONS IN A  
WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL, AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL EXPOSURE OF PERSONNEL WITH  
AND WITHOUT STANDARD AIR FORCE EAR PROTECTORS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 608 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 34. VC-118A IN-FLIGHT CREW/  
PASSENGER NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 75 22P FARINACCI, NICK A. ; COLE,  
JOHN N. ; MOHLMAN, HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-34  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 34, AD-A029  
609.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, FLIGHT CREWS, NOISE(SOUND),  
INFLIGHT, SOUND PRESSURE, INTERFERENCE,  
EXPOSURE(PHYSIOLOGY), EAR PROTECTORS, VOICE  
COMMUNICATIONS, PASSENGER AIRCRAFT, TRANSPORT  
AIRCRAFT, PASSENGERS  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, VC-118A  
AIRCRAFT, VC-118 AIRCRAFT

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THE VC-118A IS A USAF PASSENGER AIRCRAFT WITH  
CARGO TRANSPORT CAPABILITY. THIS REPORT PROVIDES  
MEASURED DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS  
AT FLIGHT CREW/PASSENGER LOCATIONS INSIDE THIS  
AIRCRAFT DURING NORMAL FLIGHT OPERATIONS. DATA ARE  
REPORTED FOR 24 LOCATIONS IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 609 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 35. T-39B IN-FLIGHT CREW/  
PASSENGER NOISE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 75 15P FARINACCI, NICK A. ; COLE,  
JOHN N. ; MOHLMAN, HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-35  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 37, AD-A029  
610.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS,  
PASSENGERS, SOUND PRESSURE, NOISE(SOUND),  
INTERFERENCE, EXPOSURE(PHYSIOLOGY), EAR  
PROTECTORS, VOICE COMMUNICATIONS, UTILITY AIRCRAFT,  
TRAINING PLANES (U)  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, T-39  
AIRCRAFT, T-39B AIRCRAFT (U)

THE T-39B IS A USAF COMBAT READINESS TRAINER  
AND UTILITY AIRCRAFT. THIS REPORT PROVIDES  
MEASURED DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS  
AT FLIGHT CREW/PASSENGER LOCATIONS INSIDE THIS  
AIRCRAFT DURING NORMAL FLIGHT OPERATIONS. DATA ARE  
REPORTED FOR 4 LOCATIONS IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 610 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 37. F-4D IN-FLIGHT CREW  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 75 15P ROSE, JUSTUS F., JR.;  
FARINACCI, NICK A.; COLE, JOHN N.; MOHLMAN,  
HENRY; EILERMAN, DAVID F.;  
REPT. NO. AMRL-TR-75-50-VOL-37  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 38, AD-A029  
611.

DESCRIPTORS: \*NOISE POLLUTION; \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, FLIGHT CREWS, INFLIGHT,  
NOISE(SOUND), VOICE COMMUNICATIONS, FIGHTER  
BOMBERS, SOUND PRESSURE, INTERFERENCE,  
EXPOSURE(PHYSIOLOGY), EAR PROTECTORS  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, F-4  
AIRCRAFT, F-4D AIRCRAFT

(U)

(U)

THE F-4D IS A USAF LONG-RANGE, ALL-WEATHER  
ATTACK FIGHTER-BOMBER AIRCRAFT. THIS REPORT  
PROVIDES MEASURED DATA DEFINING THE BIOACOUSTIC  
ENVIRONMENTS AT FLIGHT CREW LOCATIONS INSIDE THIS  
AIRCRAFT DURING NORMAL FLIGHT OPERATIONS. DATA ARE  
REPORTED 1 LOCATION IN A WIDE VARIETY OF PHYSICAL AND  
PSYCHOACOUSTIC MEASURES: OVERALL AND BAND SOUND  
PRESSURE LEVELS, C-WEIGHTED AND A-WEIGHTED SOUND  
LEVELS, PREFERRED SPEECH INTERFERENCE LEVEL,  
PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR TOTAL  
DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT STANDARD  
AIR FORCE EAR PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 613 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 42. EC-135H IN-  
FLIGHT CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 75 28P FARINACCI, NICK A. ; COLE,  
JOHN N. ; MOHLMAN, HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-42  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 45, AD-A029  
614.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS,  
INTERFERENCE, SPEECH TRANSMISSION, SOUND PRESSURE,  
EAR PROTECTORS, EXPOSURE (PHYSIOLOGY),  
RECONNAISSANCE AIRCRAFT

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, EC-135  
AIRCRAFT, EC-135H AIRCRAFT, ELECTRONIC AIRCRAFT

(U)

THE EC-135H IS A MODIFIED KC-135A AIRCRAFT  
EQUIPPED AS AN AIRBORNE COMMAND POST FOR USE BY HQ  
USAF (NIGHT WATCH). THIS REPORT PROVIDES  
MEASURED DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS  
AT FLIGHT CREW/PASSENGER LOCATIONS INSIDE THIS  
AIRCRAFT DURING NORMAL FLIGHT OPERATIONS. DATA ARE  
REPORTED FOR 36 LOCATIONS IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A029 614 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 45. F-111E IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 75 15P ROSE, JUSTUS F. , JR. ;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-45  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 46, AD-A029  
615.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS, SOUND  
PRESSURE, SPEECH TRANSMISSION, INTERFERENCE, EAR  
PROTECTORS, EXPOSURE(PHYSIOLOGY), SUPERSONIC  
AIRCRAFT, FIGHTER BOMBERS, TACTICAL AIRCRAFT  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, F-111  
AIRCRAFT, F-111E AIRCRAFT

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THE F-111E IS A USAF TWO-SEAT, ALL-WEATHER  
SUPERSONIC TACTICAL FIGHTER-BOMBER WITH AN AUTOMATIC  
LOW-ALTITUDE TERRAIN FOLLOWING CAPABILITY. THIS  
REPORT PROVIDES MEASURED DATA DEFINING THE  
BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW LOCATIONS  
INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT OPERATIONS.  
DATA ARE REPORTED FOR ONE LOCATION IN A WIDE  
VARIETY OF PHYSICAL AND PSYCHOACOUSTIC MEASURES:  
OVERALL AND BAND SOUND PRESSURE LEVELS, C-WEIGHTED  
AND A-WEIGHTED SOUND LEVELS, PREFERRED SPEECH  
INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 615 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 46. 0-2A IN-FLIGHT  
CREW NOISE.

(U)

OCT 75 12P ROSE, JUSTUS F. , JR. ;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-46  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 47, AD-A029  
616.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS,  
INTERFERENCE, SPEECH TRANSMISSION, SOUND PRESSURE,  
EAR PROTECTORS, EXPOSURE (PHYSIOLOGY),  
OBSERVATION AIRCRAFT, UTILITY AIRCRAFT  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, 0-2  
AIRCRAFT, 0-2A AIRCRAFT

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THE 0-2A IS A USAF FORWARD AIR-CONTROL  
AIRCRAFT WITH ADDITIONAL CAPABILITY FOR LIGHT CARGO  
AND ADMINISTRATIVE TRANSPORT TYPE MISSIONS. THIS  
REPORT PROVIDES MEASURED DATA DEFINING THE  
BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW LOCATIONS  
INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT OPERATIONS.  
DATA ARE REPORTED FOR ONE LOCATION IN A WIDE  
VARIETY OF PHYSICAL AND PSYCHOACOUSTIC MEASURES:  
OVERALL AND BAND SOUND PRESSURE LEVELS, C-WEIGHTED  
AND A-WEIGHTED SOUND LEVELS, PREFERRED SPEECH  
INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 616 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 47. O-2B IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 75 15P ROSE, JUSTUS F. , JR.;  
MOHLMAN, HENRY ; FARINACCI, NICK A. ; EILERMAN,  
DAVID ; COLE, JOHN N. ;  
REPT. NO. AMRL-TR-75-50-VOL-47  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 48, AD-A029  
617.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS, SOUND  
PRESSURE, EAR PROTECTORS, SPEECH TRANSMISSION,  
INTERFERENCE, EXPOSURE (PHYSIOLOGY), UTILITY  
AIRCRAFT, OBSERVATION AIRCRAFT  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, O-2  
AIRCRAFT, O-2B AIRCRAFT

(U)

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THE O-2B IS A USAF AIRBORNE PSYCHOLOGICAL  
WARFARE AIRCRAFT, WITH ADDITIONAL CAPABILITY FOR  
LIGHT CARGO, LIAISON, AND ADMINISTRATIVE TRANSPORT  
TYPE MISSIONS. THIS REPORT PROVIDES MEASURED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW  
LOCATIONS INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR TWO LOCATIONS IN  
A WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 617 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 48. T-33A IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 75 15P ROSE, JUSTUS F., JR.;  
MOHLMAN, HENRY; FARINACCI, NICK A.; COLE, JOHN  
N.; EILERMAN, DAVID;  
REPT. NO. AMRL-TR-75-50-VOL-48  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 49, AD-A029  
618.

DESCRIPTORS: \*NOISE POLLUTION; \*BIOACOUSTICS;  
\*AIRCRAFT NOISE; SOUND PRESSURE; INFLIGHT;  
FLIGHT CREWS; INTERFERENCE; SPEECH TRANSMISSION;  
EXPOSURE (PHYSIOLOGY); TRAINING PLANES; EAR  
PROTECTORS; JET AIRCRAFT  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE; T-33  
AIRCRAFT; T-33A AIRCRAFT

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THE T-33A IS A USAF BASIC JET TRAINING  
AIRCRAFT USED FOR PILOT TRANSITION TO TURBOJET  
FIGHTER AIRCRAFT AND FOR PILOT PROFICIENCY TRAINING.  
THIS REPORT PROVIDES MEASURED DATA DEFINING THE  
BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW LOCATIONS  
INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT OPERATIONS.  
DATA ARE REPORTED FOR ONE LOCATION IN A WIDE  
VARIETY OF PHYSICAL AND PSYCHOACOUSTIC MEASURES:  
OVERALL AND BAND SOUND PRESSURE LEVELS, C-WEIGHTED  
AND A-WEIGHTED SOUND LEVELS, PREFERRED SPEECH  
INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 618 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK:  
VOLUME 49. T-34A IN-FLIGHT CREW  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 75 43P FARINACCI, NICK A. ; EILERMAN,  
DAVID ; COLE, JOHN N. ; MOHLMAN, HENRY ;  
REPT. NO. AMRL-TR-75-50-VOL-49  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 50, AD-A029  
619.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, FLIGHT CREWS, INFLIGHT,  
NOISE(SOUND), SOUND PRESSURE, SPEECH  
TRANSMISSION, INTERFERENCE, EAR PROTECTORS,  
EXPOSURE(PHYSIOLOGY), TRAINING PLANES  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, T-43  
AIRCRAFT, T-43A AIRCRAFT

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THE T-43A IS A USAF SUBSONIC NAVIGATIONAL  
TRAINER AIRCRAFT. THIS REPORT PROVIDES MEASURED  
DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT  
CREW/PASSENGER LOCATIONS INSIDE THIS AIRCRAFT DURING  
NORMAL FLIGHT OPERATIONS. DATA ARE REPORTED FOR 26  
LOCATIONS IN A WIDE VARIETY OF PHYSICAL AND  
PSYCHOACOUSTIC MEASURES: OVERALL AND BAND SOUND  
PRESSURE LEVELS, C-WEIGHTED AND A-WEIGHTED SOUND  
LEVELS, PREFERRED SPEECH INTERFERENCE LEVEL,  
PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR TOTAL  
DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT STANDARD  
AIR FORCE EAR PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 619 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 50. HH-43B IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 75 15P ROSE, JUSTUS F., JR.;  
FARINACCI, NICK A.; COLE, JOHN N.; MOHLMAN,  
HENRY; EILERMAN, DAVID;  
REPT. NO. AMRL-TR-75-50-VOL-50  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 51, AD-A029  
620.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS,  
NOISE(SOUND), SOUND PRESSURE, SPEECH  
TRANSMISSION, INTERFERENCE, EAR PROTECTORS,  
EXPOSURE(PHYSIOLOGY), HELICOPTERS, RESCUE  
VEHICLES

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, HH-43  
AIRCRAFT, HH-43B AIRCRAFT, RESCUE AIRCRAFT

(U)

THE HH-43B IS A USAF LOCAL CRASH RESCUE  
HELICOPTER USED FOR FIRE CONTROL AND SUPPRESSION, AND  
AERIAL/CRASH-ENTRY PICKUP OF SURVIVORS. THIS REPORT  
PROVIDES MEASURED DATA DEFINING THE BIOACOUSTIC  
ENVIRONMENTS AT FLIGHT CREW LOCATIONS INSIDE THIS  
HELICOPTER DURING NORMAL FLIGHT OPERATIONS. DATA  
ARE REPORTED FOR THREE LOCATIONS IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 620 13/2 20/1 5/9  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 51. HH-53C IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 75 15P ROSE, JUSTUS F., JR.;  
FARINACCI, NICK A.; COLE, JOHN N.; MOHLMAN,  
HENRY; EILERMAN, DAVID;  
REPT. NO. AMRL-TR-75-50-VOL-51  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 52, AD-A029  
621.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, HELICOPTERS, FLIGHT CREWS,  
NOISE(SOUND), HANDBOOKS, SOUND PRESSURE,  
INFLIGHT, AMPHIBIOUS AIRCRAFT, SEARCH AND RESCUE,  
SPEECH, INTERFERENCE

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, HH-53C  
AIRCRAFT, H-53 AIRCRAFT, SPEECH INTERFERENCE

(U)

THE HH-53C IS A USAF HEAVY ASSAULT TRANSPORT  
HELICOPTER USED TO SEARCH, LOCATE, AND RECOVER COMBAT  
AIRCREW MEMBERS, PERSONNEL, AND/OR VITAL AEROSPACE  
HARDWARE. THIS REPORT PROVIDES MEASURED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW  
LOCATIONS INSIDE THIS HELICOPTER DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR 15 LOCATIONS IN A  
WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS. REFER TO VOLUME 1 OF THIS HANDBOOK,  
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK,  
VOL 1: ORGANIZATION, CONTENT AND  
APPLICATION, AMRL-TR-75-50(1) 1975, FOR  
DISCUSSION OF THE OBJECTIVE AND DESIGN OF THE  
HANDBOOK; THE TYPES OF DATA PRESENTED, MEASUREMENT  
PROCEDURES, INSTRUMENTATION, DATA PROCESSING,  
DEFINITIONS OF QUANTITIES, SYMBOLS, EQUATIONS,  
APPLICATIONS, LIMITATIONS, ETC. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 621 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 52. A-1E IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 15P ROSE, JUSTUS F., JR.;  
FARINACCI, NICK A.; COLE, JOHN N.; MOHLMAN,  
HENRY; EILERMAN, DAVID;  
REPT. NO. AMRL-TR-75-50-VOL-52  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 53, AD-A029  
622.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS,  
NOISE(SOUND), SOUND PRESSURE, INTERFERENCE,  
EXPOSURE(PHYSIOLOGY), EAR PROTECTORS, VOICE  
COMMUNICATIONS, BOMBER AIRCRAFT, UTILITY AIRCRAFT (U)  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, A-1  
AIRCRAFT, A-1E AIRCRAFT (U)

THE A-1E IS A USAF LIGHT ATTACK BOMBER OR  
UTILITY AIRCRAFT USED IN COUNTER-INSURGENCY  
OPERATIONS. THIS REPORT PROVIDES MEASURED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW  
LOCATIONS INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR ONE LOCATION IN A  
WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 622 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 53. AC-119G IN-  
FLIGHT CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 13P ROSE, JUSTUS F. , JR.;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-53  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 54, AD-A029  
623.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, GUNSHIPS, FLIGHT CREWS,  
PASSENGERS, SOUND PRESSURE, INTENSITY, SPEECH  
TRANSMISSION, INTERFERENCE,  
EXPOSURE (PHYSIOLOGY), EAR PROTECTORS,  
INFLIGHT, HANDBOOKS  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, AC-119G  
AIRCRAFT, C-119 AIRCRAFT

(U)

(U)

THE AC-119G IS A USAF GUNSHIP FOR  
INTERDICTION AND SUPPRESSION OF ENEMY GROUND ATTACK.  
THIS REPORT PROVIDES MEASURED DATA DEFINING THE  
BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW/PASSENGER  
LOCATIONS INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR 6 LOCATIONS IN A  
WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS. REFER TO VOLUME 1 OF THIS HANDBOOK,  
'USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK,  
VOL 1: ORGANIZATION, CONTENT AND  
APPLICATIONS', AMRL-TR-75-50(1) 1975, FOR  
DISCUSSION OF THE OBJECTIVE AND DESIGN OF THE  
HANDBOOK; THE TYPES OF DATA PRESENTED, MEASUREMENT  
PROCEDURES, INSTRUMENTATION, DATA PROCESSING,  
DEFINITIONS OF QUANTITIES, SYMBOLS, EQUATIONS,  
APPLICATIONS, LIMITATIONS, ETC. (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 623 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 54. C-123K IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 75 24P ROSE, JUSTUS F. , JR.;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-54  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 55, AD-A029  
624.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, TRANSPORT AIRCRAFT, FLIGHT CREWS,  
PASSENGERS, SOUND PRESSURE, INTENSITY, SPEECH  
TRANSMISSION, INTERFERENCE, EAR PROTECTORS,  
EXPOSURE (PHYSIOLOGY), INFLIGHT, HANDBOOKS (U)  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, C-123K  
AIRCRAFT (U)

THE C-123K IS A USAF MEDIUM ASSAULT CARGO  
AIRCRAFT USED AS A TROOP TRANSPORT AND CARGO CARRIER  
WITH STOL CAPABILITY. THIS REPORT PROVIDES  
MEASURED DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS  
AT FLIGHT CREW/PASSENGER LOCATIONS INSIDE THIS  
AIRCRAFT DURING NORMAL FLIGHT OPERATIONS. DATA ARE  
REPORTED FOR 13 LOCATIONS IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS. REFER TO  
VOLUME 1 OF THIS HANDBOOK, 'USAF  
BIOENVIRONMENTAL NOISE DATA HANDBOOK, VOL  
1: ORGANIZATION, CONTENT AND APPLICATION',  
AMRL-TR-75-50(1) 1975, FOR DISCUSSION OF THE  
OBJECTIVE AND DESIGN OF THE HANDBOOK, THE TYPES OF  
DATA PRESENTED; MEASUREMENT PROCEDURES,  
INSTRUMENTATION, DATA PROCESSING, DEFINITIONS OF  
QUANTITIES, SYMBOLS, EQUATIONS, APPLICATIONS,  
LIMITATIONS, ETC. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 624 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 55. AC-130A IN-  
FLIGHT CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 13P ROSE, JUSTUS F., JR.;  
FARINACCI, NICK A.; COLE, JOHN N.; MOHLMAN,  
HENRY; EILERMAN, DAVID;  
REPT. NO. AMRL-TR-75-50-VOL-55  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 56, AD-A029  
625.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, TRANSPORT AIRCRAFT, SOUND  
PRESSURE, INTENSITY, FLIGHT CREWS, PASSENGERS,  
SPEECH TRANSMISSION, INTERFERENCE,  
EXPOSURE (PHYSIOLOGY), INFLIGHT, HANDBOOKS  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, AC-130A  
AIRCRAFT, C-130 AIRCRAFT

(U)

(U)

THE AC-130A IS A USAF CLOSE-SUPPORT  
CONVERSION OF THE C-130A MEDIUM-RANGE COMBAT  
TRANSPORT AIRCRAFT. THIS REPORT PROVIDES MEASURED  
DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT  
CREW/PASSENGER LOCATIONS INSIDE THIS AIRCRAFT DURING  
NORMAL FLIGHT OPERATIONS. DATA ARE REPORTED FOR 15  
LOCATIONS IN A WIDE VARIETY OF PHYSICAL AND  
PSYCHOACOUSTIC MEASURES: OVERALL AND BAND SOUND  
PRESSURE LEVELS, C-WEIGHTED AND A-WEIGHTED SOUND  
LEVELS, PERFERRED SPEECH INTERFERENCE LEVEL,  
PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR TOTAL  
DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT STANDARD  
AIR FORCE EAR PROTECTORS, REFER TO VOLUME 1  
OF THIS HANDBOOK, 'USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK, VOL 1: ORGANIZATION,  
CONTENT AND APPLICATION', AMRL-TR-75-  
50(1) 1975, FOR DISCUSSION OF THE OBJECTIVE AND  
DESIGN OF THE HANDBOOK, THE TYPES OF DATA PRESENTED,  
MEASUREMENT PROCEDURES, INSTRUMENTATION, DATA  
PROCESSING, DEFINITIONS OF QUANTITIES, SYMBOLS,  
EQUATIONS, APPLICATIONS, LIMITATIONS, ETC.  
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 625 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 56. HC-130N IN-  
FLIGHT CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 21P ROSE, JUSTUS F. , JR.;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-56  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 57, AD-A029  
626.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS,  
NOISE(SOUND), SOUND PRESSURE, INTERFERENCE,  
EXPOSURE(PHYSIOLOGY), EAR PROTECTORS, SPEECH  
TRANSMISSION, TANKER PLANES, RESCUE VEHICLES,  
TRANSPORT AIRCRAFT

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, HC-130  
AIRCRAFT, HC-130N AIRCRAFT

(U)

THE HC-130N IS A USAF AIRCRAFT USED TO SEARCH  
FOR, LOCATE AND RECOVER PERSONNEL AND/OR RETRIEVE  
MATERIAL IN GLOBAL AIR AND SPACE OPERATIONS; IT ALSO  
SERVES AS AN AIR REFUELING TANKER FOR HELICOPTERS.  
THIS REPORT PROVIDES MEASURED DATA DEFINING THE  
BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW/PASSENGER  
LOCATIONS INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR 14 LOCATIONS IN A  
WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 626 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 57. T-28D-5 IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 15P ROSE, JUSTUS F. , JR.;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-57  
PROJ: AF-7231  
TASK: 723105

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 60, AD-A029  
627.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, INFLIGHT, FLIGHT CREWS,  
NOISE(SOUND), SOUND PRESSURE, INTERFERENCE,  
EXPOSURE(PHYSIOLOGY), RECONNAISSANCE AIRCRAFT,  
EAR PROTECTORS, SPEECH TRANSMISSION, CLOSE  
SUPPORT

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, T-28  
AIRCRAFT, T-28D-5 AIRCRAFT

(U)

THE T-28D-5 IS A USAF LIGHT ARMED  
RECONNAISSANCE AND CLOSE AIR SUPPORT AIRCRAFT USED  
FOR COUNTER-INSURGENCY OPERATIONS. THIS REPORT  
PROVIDES MEASURED DATA DEFINING THE BIOACOUSTIC  
ENVIRONMENTS AT FLIGHT CREW LOCATIONS INSIDE THIS  
AIRCRAFT DURING NORMAL FLIGHT OPERATIONS. DATA ARE  
REPORTED FOR ONE LOCATION IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 627 13/2 20/1 5/9  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 60. UH-1N IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 15P ROSE, JUSTUS F., JR.;  
FARINACCI, NICK A.; COLE, JOHN N.; MOHLMAN,  
HENRY; EILERMAN, DAVID;  
REPT. NO. AMRL-TR-75-50-VOL-60  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 61, AD-A029  
628.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, HELICOPTERS, FLIGHT CREWS,  
HANDBOOKS, NOISE(SOUND), GUNSHIPS, INFLIGHT,  
EAR PROTECTORS, INTERFERENCE, SOUND PRESSURE,  
SPEECH, EXPOSURE(PHYSIOLOGY)

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, UH-1N  
AIRCRAFT, H-1 AIRCRAFT, SPEECH INTERFERENCE

(U)

THE UH-1N IS A USAF UTILITY HELICOPTER  
CONFIGURED AS A GUNSHIP. THIS REPORT PROVIDES  
MEASURED DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS  
AT FLIGHT CREW LOCATIONS INSIDE THIS HELICOPTER  
DURING NORMAL FLIGHT OPERATIONS. DATA ARE REPORTED  
FOR ONE LOCATION IN A WIDE VARIETY OF PHYSICAL AND  
PSYCHOACOUSTIC MEASURES: OVERALL AND BAND SOUND  
PRESSURE LEVELS, C-WEIGHTED AND A-WEIGHTED SOUND  
LEVELS, PREFERRED SPEECH INTERFERENCE LEVEL,  
PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR TOTAL  
DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT STANDARD  
AIR FORCE EAR PROTECTORS. REFER TO VOLUME 1  
OF THIS HANDBOOK, USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK, VOL 1: ORGANIZATION,  
CONTENT AND APPLICATION, AMRL-TR-75-50(1)  
1975, FOR DISCUSSION OF THE OBJECTIVE AND DESIGN OF  
THE HANDBOOK, THE TYPES OF DATA PRESENTED,  
MEASUREMENT PROCEDURES, INSTRUMENTATION, DATA  
PROCESSING, DEFINITIONS OF QUANTITIES, SYMBOLS,  
EQUATIONS, APPLICATIONS, LIMITATIONS, ETC.  
(AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A029 628 13/2 20/1 5/9  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME 61. HH-3E IN-FLIGHT  
CREW NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 15P ROSE, JUSTUS F. , JR.;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-61  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 62, AD-029  
629.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, HELICOPTERS, FLIGHT CREWS,  
HANDBOOKS, NOISE(SOUND), AMPHIBIOUS AIRCRAFT,  
SEARCH AND RESCUE, INFLIGHT, INTERFERENCE, SOUND  
PRESSURE, SPEECH, EXPOSURE(PHYSIOLOGY) (U)  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, HH-3E  
AIRCRAFT, H-3 AIRCRAFT, SPEECH INTERFERENCE (U)

THE HH-3E IS A USAF AMPHIBIOUS TRANSPORT  
HELICOPTER USED FOR SEARCH AND RESCUE, AND COMBAT  
AIRCREW RECOVERY. THIS REPORT PROVIDES MEASURED  
DATA DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT  
CREW LOCATIONS INSIDE THIS HELICOPTER DURING NORMAL  
FLIGHT OPERATIONS. DATA ARE REPORTED FOR SEVEN  
LOCATIONS IN A WIDE VARIETY OF PHYSICAL AND  
PSYCHOACOUSTIC MEASURES: OVERALL AND BAND SOUND  
PRESSURE LEVELS, C-WEIGHTED AND A-WEIGHTED SOUND  
LEVELS, PREFERRED SPEECH INTERFERENCE LEVELS,  
PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR TOTAL  
DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT STANDARD  
AIR FORCE EAR PROTECTORS. REFER TO VOLUME 1  
OF THIS HANDBOOK, USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK, VOL 1: ORGANIZATION,  
CONTENT AND APPLICATION, AMRL-TR-75-50(1)  
1975, FOR DISCUSSION OF THE OBJECTIVE AND DESIGN OF  
THE HANDBOOK, THE TYPES OF DATA PRESENTED,  
MEASUREMENT PROCEDURES, INSTRUMENTATION, DATA  
PROCESSING, DEFINITIONS OF QUANTITIES, SYMBOLS,  
EQUATIONS, APPLICATIONS, LIMITATIONS, ETC.  
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A029 629 13/2 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK:  
VOLUME 62. C-5A IN-FLIGHT CREW/PASSENGER  
NOISE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 75 30P ROSE, JUSTUS F. , JR.;  
FARINACCI, NICK A. ; COLE, JOHN N. ; MOHLMAN,  
HENRY ; EILERMAN, DAVID ;  
REPT. NO. AMRL-TR-75-50-VOL-62  
PROJ: AF-7231  
TASK: 723140

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 63, AD-A029  
630.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, TURBOFAN ENGINES, JET TRANSPORT  
PLANES, FLIGHT CREWS, PASSENGERS, SOUND PRESSURE,  
INTENSITY, SPEECH TRANSMISSION, INTERFERENCE,  
EAR PROTECTORS, EXPOSURE (PHYSIOLOGY),  
INFLIGHT, HANDBOOKS  
IDENTIFIERS: \*BIOENVIRONMENTAL NOISE, C-5A  
AIRCRAFT, C-5 AIRCRAFT

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(U)

THE C-5A IS A USAF HEAVY LOGISTICS TRANSPORT  
AIRCRAFT. THIS REPORT PROVIDES MEASURED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW/  
PASSENGER LOCATIONS INSIDE THIS AIRCRAFT DURING  
NORMAL FLIGHT OPERATIONS. DATA ARE REPORTED FOR 66  
LOCATIONS IN A WIDE VARIETY OF PHYSICAL AND  
PSYCHOACOUSTIC MEASURES: OVERALL AND BAND SOUND  
PRESSURE LEVELS, C-WEIGHTED AND A-WEIGHTED SOUND  
LEVELS, PREFERRED SPEECH INTERFERENCE LEVEL,  
PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR TOTAL  
DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT STANDARD  
AIR FORCE EAR PROTECTORS. REFER TO VOLUME 1  
OF THIS HANDBOOK, 'USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK, VOL 1: ORGANIZATION,  
CONTENT AND APPLICATION', AMRL-TR-75-  
50(1) 1975, FOR DISCUSSION OF THE OBJECTIVE AND  
DESIGN OF THE HANDBOOK, THE TYPES OF DATA PRESENTED,  
MEASUREMENT PROCEDURES, INSTRUMENTATION, DATA  
PROCESSING, DEFINITIONS OF QUANTITIES, SYMBOLS,  
EQUATIONS, APPLICATIONS, LIMITATIONS, ETC.  
(AUTHOR)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A030 376 21/5  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

CORE ENGINE NOISE PROGRAM. VOLUME III.  
PREDICTION METHODS -- SUPPLEMENT I. -  
EXTENSION OF PREDICTION METHODS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 74-MAY 75,  
MAR 76 51P EMMERLING, J. J. ; KAZIN, S.  
B. ; MATTA, R. K. ;  
REPT. NO. R76AEG305-VOL-3-SUPPL-1  
CONTRACT: DOT-FA72WA-3023  
MONITOR: FAA-RD 74-125-3-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPPLEMENT TO REPORT DATED AUG 74,  
REPT. NO. FAA-RD-74-125-3, VOLUME 3, AD-A013  
131.

DESCRIPTORS: \*TURBOFAN ENGINES, \*JET ENGINE NOISE,  
AIRCRAFT NOISE, NOISE REDUCTION, NOISE POLLUTION,  
ENGINE COMPONENTS, ACOUSTIC MEASUREMENT,  
COMMERCIAL AIRCRAFT, ATTENUATION, LOW FREQUENCY  
IDENTIFIERS: NOISE SOURCES

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(U)

THE CORE NOISE PREDICTION TECHNIQUE DESCRIBED IN  
VOLUME III WAS VALIDATED USING SEVERAL ADDITIONAL  
SETS OF ENGINE DATA. THE DATA INCLUDED DISCERNIBLE  
CORE NOISE AT HIGH POWER SETTINGS AND WERE DERIVED  
FROM BOTH GENERAL ELECTRIC AND EXTERNAL TESTS, ON  
ENGINES BY GE AND OTHER MANUFACTURERS. THE THREE  
LINE POWER LEVEL PREDICTION METHOD WAS COLLAPSED TO  
SINGLE UNIFIED LINE PREDICTION THROUGH ADDITION OF A  
TURBINE WORK EXTRACTION TERM TO ACCOUNT FOR THE LOW  
FREQUENCY NOISE ATTENUATION DUE TO TURBINE BLADING.  
DATA FROM COMBUSTOR COMPONENT TESTS WERE COMPARED  
TO ENGINE NOISE LEVELS AND FOUND TO INDICATE  
SIGNIFICANT ATTENUATION OF LOW FREQUENCY NOISE IN  
PROPAGATION THROUGH TURBINE STAGES. AN ANALYTICAL  
METHOD FOR PREDICTING THIS LOW FREQUENCY NOISE  
ATTENUATION IS PROVIDED. (AUTHOR)

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A030 639 20/1 1/3 14/2  
NATIONAL RESEARCH COUNCIL OF CANADA OTTAWA (ONTARIO) DIV OF  
MECHANICAL ENGINEERING

MODEL STUDY OF A PROPOSED ENGINEERING  
ACOUSTIC RESEARCH FACILITY (ETUDE SUR  
MODELE D'UN PROJET D'INSTALLATION DE  
RECHERCHES EN GENIE ACOUSTIQUE),

(U)

JUL 76 29P JOHNSTON, G. W. RUETER, F.  
;CHAPPELL, M. S. ;  
REPT. NO. DME-ME-243  
MONITOR: NRC 15480

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACOUSTICS, \*BACKGROUND NOISE, \*JET  
ENGINE NOISE, TEST FACILITIES, RESEARCH FACILITIES,  
MODELS, ANECHOIC CHAMBERS, MEASUREMENT, AIRCRAFT  
LANDINGS, TAKEOFF, VERTICAL TAKEOFF AIRCRAFT,  
SHORT TAKEOFF AIRCRAFT, CANADA  
IDENTIFIERS: AEROACOUSTIC MODELS

(U)

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A ONE-TWELFTH SCALE AEROACOUSTIC MODEL OF A  
PROPOSED ENGINEERING ACOUSTIC RESEARCH FACILITY HAS  
BEEN TESTED TO ASSESS THE BACKGROUND NOISE LEVELS IN  
THE ANECHOIC MEASUREMENT AREA, AND TO DEVELOP A  
SUITABLE EXHAUST COLLECTOR FOR DEFLECTED JET  
CONDITIONS. THE FACILITY COMPRISES AN OPEN CIRCUIT,  
OPEN JET WIND TUNNEL WITH AN ANECHOIC SPACE  
SURROUNDING THE TEST SECTION. COLLECTOR  
CONFIGURATIONS WITH ACCEPTABLY LOW BACKGROUND NOISE  
AND LOW SENSITIVITY TO JET DEFLECTION HAVE BEEN  
DEFINED, BUT THESE FEATURES WERE ACHIEVED AT THE  
EXPENSE OF SOME AERODYNAMIC EFFICIENCY.  
(AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A030 655 20/1 1/3 9/2  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

AIRCRAFT CONFIGURATION NOISE REDUCTION.  
VOLUME I. ENGINEERING ANALYSIS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 74-JUN 76,  
JUN 76 412P DUNN, D. G. ; BUTZEL, L. M.  
; DIBLASI, A. ; FILLER, L. ; JACOBS, L. D. ;  
REPT. NO. D6-42849-1  
CONTRACT: DOT-FA74WA-3497  
MONITOR: FAA/RD 76/76-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A030  
656.

DESCRIPTORS: \*AIRCRAFT NOISE, \*NOISE REDUCTION,  
\*JET ENGINE NOISE, CONFIGURATIONS, COMPUTER  
PROGRAMS, SHIELDING, FUSELAGES, WINGS, TURBOFAN  
ENGINES, BYPASS ENGINES

(U)

IDENTIFIERS: \*NOISE SUPPRESSION, ENGINEERING  
ANALYSIS

(U)

THIS REPORT DISCUSSES USE OF WING AND FUSELAGE  
STRUCTURES AS NOISE BARRIERS FOR SHIELDING AIRCRAFT  
ENGINE NOISE FROM THE COMMUNITY. THE REPORT  
CONCERNS USE OF FAVORABLE AIRCRAFT CONFIGURATIONS FOR  
COMMUNITY NOISE REDUCTION OF TURBOJET AND TURBOFAN  
POWERED AIRCRAFT. SIGNIFICANT NOISE REDUCTION  
POTENTIAL IS ILLUSTRATED ON A HYPOTHETICAL ENGINE-  
OVER-WING (EOW) CONFIGURATION USING HIGH-BYPASS-  
RATIO TURBOFAN ENGINES. NOISE SHIELDING ESTIMATION  
PROCEDURES ARE DEVELOPED FOR TWO TYPES OF  
CONFIGURATION NOISE REDUCTION CONCEPTS: I.E., THE  
EOW AND THE ENGINE-OVER-FUSELAGE (EOF). RESULTS  
ARE DESCRIBED FOR A THEORETICAL ANALYSIS, A MAJOR  
BOEING/AERITALIA TEST PROGRAM, AND AN EMPIRICAL  
ANALYSIS OF TEST DATA. AS A RESULT, ANALYTICAL  
PREDICTION PROCEDURES ARE DEFINED, COMPUTERIZED, AND  
ADDED TO THE SOFTWARE PREVIOUSLY DEVELOPED UNDER  
NASA CONTRACT NAS2-6969. THE SHIELDING  
PREDICTION PROCEDURES CONSIDER INDIVIDUAL NOISE  
COMPONENTS: INLET FAN, COMPRESSOR, EXIT FAN, CORE,  
TURBINE, AND JET NOISE. A NEW SOURCE, JET/EDGE  
INTERACTION NOISE, CAN ALSO BE PREDICTED USING THE  
PROCEDURES. THE COLLECTIVE SOFTWARE, INCORPORATING  
THE SHIELDING PACKAGE OF THIS REPORT, CAN BE USED TO  
ESTIMATE COMMUNITY NOISE LEVELS OF WING AND FUSELAGE  
SHIELDED TURBOFAN OR TURBOJET NOISE.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A030 656 20/1 1/3 9/2  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

AIRCRAFT CONFIGURATION NOISE REDUCTION.  
VOLUME II. COMPUTER PROGRAM USER'S GUIDE  
AND OTHER APPENDICES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 74-JUN 76,  
JUN 76 140P DUNN, D. G. ; CECIL, D. J.  
; BUTZEL, L. M. ; CAMPBELL, J. M. ; LU, H. Y. ;

REPT. NO. D6-42849-2  
CONTRACT: DOT-FA74WA-3497  
MONITOR: FAA/RD 76/76-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-A030  
657.

DESCRIPTORS: \*AIRCRAFT NOISE, \*NOISE REDUCTION,  
\*JET ENGINE NOISE, \*COMPUTER PROGRAMS, COMPUTER  
PROGRAM DOCUMENTATION, USER NEEDS, VELOCITY,  
WINGS, FUSELAGES, CONFIGURATIONS, FORTRAN,  
INTERFACES, DIFFRACTION, SUBROUTINES  
IDENTIFIERS: USERS MANUALS, COMPUTER SOFTWARE

(U)

(U)

THIS REPORT IS VOLUME 2 OF THE SERIES AND WAS  
PREPARED JOINTLY BY THE NOISE TECHNOLOGY STAFF  
OF THE BOEING COMMERCIAL AIRPLANE COMPANY AND  
THE NOISE SYSTEMS GROUP OF BOEING COMPUTER  
SERVICES, INC. THIS VOLUME CONTAINS: THE  
USER'S GUIDE FOR THE COMPUTER SOFTWARE OF THE  
AIRCRAFT CONFIGURATION NOISE REDUCTION STUDY;  
A PRELIMINARY TEST PLAN FOR ASSESSING FORWARD  
VELOCITY EFFECTS ON WING AND FUSELAGE SHIELDING; AND  
VARIOUS CURVES, DERIVATIONS, AND BACKGROUND THEORY  
IN SUPPORT OF MATERIAL PRESENTED IN VOLUME 1.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A030 657 20/1 1/3 9/2  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

AIRCRAFT CONFIGURATION NOISE REDUCTION.  
VOLUME III. COMPUTER PROGRAM SOURCE  
LISTING. (U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 74-JUN 76,  
JUN 76 298P DUNN, D. G. ; CECIL, D. J.

REPT. NO. D6-42849-3  
CONTRACT: DOT-FA74WA-3497  
MONITOR: FAA/RD 76/76-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A030  
655.

DESCRIPTORS: \*AIRCRAFT NOISE, \*NOISE REDUCTION,  
\*JET ENGINE NOISE, \*COMPUTER PROGRAMS, FORTRAN,  
SUBROUTINES, COMPUTER PRINTOUTS, OVERLAYS,  
COMPILERS, MAGNETIC TAPE, CONFIGURATIONS,  
MACHINE CODING (U)  
IDENTIFIERS: FORTRAN 4 PROGRAMMING LANGUAGE (U)

THIS REPORT IS VOLUME 3 OF THE SERIES AND WAS  
JOINTLY PREPARED BY THE NOISE TECHNOLOGY STAFF  
OF THE BOEING COMMERCIAL AIRPLANE COMPANY AND  
THE NOISE SYSTEMS GROUP OF BOEING COMPUTER  
SERVICES, INC. THIS VOLUME CONTAINS THE SOURCE  
CODE LISTING OF THE COMPUTER PROGRAMS FOR EVALUATING  
AIRCRAFT CONFIGURATION NOISE REDUCTION AS  
DEFINED IN THE ENGINEERING DOCUMENT, VOLUME 1. THE  
USER'S GUIDE FOR THE PROGRAMS IS CONTAINED IN  
APPENDIX A OF VOLUME 2. THE MATERIAL PRESENTED  
HEREIN IS REFERENCE DATA FOR USE IN CONJUNCTION WITH  
THE MATERIAL PRESENTED IN VOLUMES 1 AND 2. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A031 449 1/3 17/7 20/1  
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN  
ILL

TECHNICAL BACKGROUND: INTERIM CRITERIA FOR  
PLANNING ROTARY-WING AIRCRAFT TRAFFIC  
PATTERNS, AND SITING NOISE-SENSITIVE LAND  
USES.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
SEP 76 17P SCHOMER, P. D.; HOMANS, B.  
L. ;  
REPT. NO. CERL-IR-N-9  
PROJ: DA-4-A762720-A-896  
TASK: 4-A-762720-A-89602

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-A031 450.

DESCRIPTORS: \*ROTARY WING AIRCRAFT, \*LAND USE,  
\*AIRCRAFT NOISE, \*HELICOPTERS, \*AIR TRAFFIC  
CONTROL SYSTEM ANALYSIS, \*FLIGHT PATHS, PLANNING,  
URBAN AREAS, PATTERNS, LANDING FIELDS,  
RANGE(DISTANCE)

(U)

IDENTIFIERS: \*FLIGHT CORRIDORS, \*AIR CORRIDORS,  
\*CORRIDORS(TRAJECTORIES)

(U)

THIS REPORT PRESENTS INTERIM CRITERIA FOR LOCATING  
ROTARY-WING AIRCRAFT TRAFFIC PATTERNS AND INGRESS AND  
EGRESS CORRIDORS INTO AN AIRFIELD/HELIPORT TO AVOID  
CONFLICT WITH NOISE-SENSITIVE LAND USES, AND PROVIDES  
CRITERIA FOR PLANNERS TO SITE NOISE-SENSITIVE LAND  
USES WITH RESPECT TO THE ESTABLISHED AIRFIELD/  
HELIPORT AND ESTABLISHED FLIGHT CORRIDORS. THESE  
INTERIM CRITERIA ARE REQUIRED BECAUSE THE EXACT AIR  
FORCE TECHNIQUE FOR PREDICTING FIXED-WING AIRCRAFT  
NOISE CANNOT CURRENTLY BE USED DUE TO THE  
UPREDICTABILITY OF HELICOPTER FLIGHT PATTERNS; THESE  
CRITERIA ARE THE BASIS FOR INTERIM PROCEDURES  
ESTABLISHED IN A COMPANION REPORT, USER MANUAL:  
INTERIM PROCEDURE FOR PLANNING ROTARY-WING  
AIRCRAFT TRAFFIC PATTERNS AND SITING NOISE-  
SENSITIVE LAND USES (CONSTRUCTION  
ENGINEERING RESEARCH LABORATORY INTERIM  
REPORT N-10, 1976). (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A031 450 1/3 17/7 20/1  
CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN  
ILL

USER MANUAL: INTERIM PROCEDURE FOR  
PLANNING ROTARY-WING AIRCRAFT TRAFFIC  
PATTERNS AND SITING NOISE-SENSITIVE LAND  
USES.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,  
SEP 76 40P SCHOMER, P. D. ; HOMANS, B.  
L. ;  
REPT. NO. CERL-IR-N-10  
PROJ: DA-4-A-762720-A-896  
TASK: 4-A-762720-A-89602

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-A031 449.

DESCRIPTORS: \*ROTARY WING AIRCRAFT, \*LAND USE,  
\*AIRCRAFT NOISE, \*HELICOPTERS, \*AIR TRAFFIC  
CONTROL SYSTEM ANALYSIS, \*FLIGHT PATHS, PLANNING,  
PATTERNS, CONTOURS, URBAN AREAS, LANDING FIELDS,  
RANGE(DISTANCE)  
IDENTIFIERS: \*FLIGHT CORRIDORS, \*AIR CORRIDORS,  
USER MANUALS, CORRIDORS(TRAJECTORIES)

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(U)

THIS REPORT PRESENTS (1) INTERIM PROCEDURES FOR  
DETERMINING THE LOCATION OF ROTARY-WING AIRCRAFT  
TRAFFIC PATTERNS AND INGRESS AND EGRESS CORRIDORS  
INTO AN AIRFIELD/HELIPORT AREA TO AVOID CONFLICT WITH  
NOISE-SENSITIVE LAND USES, AND (2) CRITERIA FOR  
SITING NOISE-SENSITIVE LAND USES WITH RESPECT TO  
ESTABLISHED AIRFIELD OR HELIPORT PLANS. THE  
PROCEDURES ARE BASED ON INTERIM CRITERIA ESTABLISHED  
IN A COMPANION REPORT, TECHNICAL BACKGROUND:  
INTERIM CRITERIA FOR PLANNING ROTARY-WING  
AIRCRAFT TRAFFIC PATTERNS AND SITING NOISE-  
SENSITIVE LAND USES (CONSTRUCTION  
ENGINEERING RESEARCH LABORATORY INTERIM  
REPORT N-9 1976). THE PRESENTATION OF THE  
PROCEDURES INCLUDES A HISTORY OF NOISE IMPACT  
MEASURES, A BACKGROUND OF THE DEVELOPMENT OF NOISE  
CONTOURS, AND TABLES FOR FINDING THE NOISE IMPACT.  
A COMPLETE DESCRIPTIVE EXAMPLE OF THE USE OF THE  
PROCEDURES IS PRESENTED AS AN AID TO THE READER.  
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A031 865 13/2 20/1 6/19  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA  
HANDBOOK: VOLUME I. ORGANIZATION,  
CONTENT AND APPLICATION,

(U)

JUN 75 92P COLE, JOHN N. ;  
REPT. NO. AMRL-TR-75-50-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-A029  
577.

DESCRIPTORS: \*NOISE POLLUTION, \*BIOACOUSTICS,  
\*AIRCRAFT NOISE, HANDBOOKS, GROUND CREWS,  
HEARING, FLIGHT CREWS, NOISE(SOUND), GROUND  
SUPPORT EQUIPMENT, SPEECH RECOGNITION,  
PERFORMANCE(HUMAN), MEASUREMENT, EAR  
PROTECTORS, DATA PROCESSING, AIR FORCE PERSONNEL,  
ACOUSTIC DATA, EXPOSURE(PHYSIOLOGY), SOUND  
PRESSURE

(U)

IDENTIFIERS: \*BIOENVIRONMENTAL NOISE

(U)

USAF AIRCRAFT, AUXILIARY EQUIPMENT, GROUND POWER  
UNITS AND OTHER AEROSPACE SYSTEMS OFTEN PRODUCE  
ACOUSTIC ENVIRONMENTS WHICH ARE POTENTIALLY  
HAZARDOUS, INTERFERE WITH VOICE COMMUNICATION AND  
TASK PERFORMANCE, OR ARE ANNOYING. SUCH  
ENVIRONMENTS CAN ADVERSELY AFFECT FLIGHT CREWS,  
AIRCRAFT PASSENGERS, GROUND CREWS, OTHER FLIGHT LINE  
PERSONNEL, AND AIRBASE COMMUNITIES. THE  
AEROSPACE MEDICAL RESEARCH LABORATORY HAS  
PREPARED A MULTI-VOLUME HANDBOOK (125+ VOLUMES)  
WHICH PROVIDES DATA DESCRIBING TYPICAL ACOUSTIC  
ENVIRONMENTS PRODUCED BY SPECIFIC, MAJOR USAF  
SYSTEMS. THIS PARTICULAR VOLUME (VOL. 1)  
DESCRIBES THE GENERAL ORGANIZATION, SCOPE, CONTENT  
AND APPLICATION OF THE ENTIRE MULTIVOLUME HANDBOOK  
AND COVERS EQUIPMENT AND PROCEDURES FOR DATA  
ACQUISITION AND ANALYSIS, PHYSICAL ACOUSTIC AND  
PSYCHOACOUSTIC MEASURES OF NOISE, AFR 161-35 NOISE  
EXPOSURE LIMITS, EAR PROTECTORS COMMONLY USED BY  
USAF PERSONNEL, NORMALIZATION AND EXTRAPOLATION OF  
FAR-FIELD NOISE DATA, AND FORMAT AND EXAMPLES OF  
HANDBOOK DATA. THIS VOLUME ALSO DESCRIBES THE  
HANDBOOK INDEX, THE DISTRIBUTION OF THE HANDBOOK, AND  
CONTACTS FOR ADDITIONAL INFORMATION.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A031 877 21/5 20/1 13/2 1/3  
BOEING COMMERCIAL AIRPLANE CO SEATTLE WASH

727/JT8D JET AND FAN NOISE FLIGHT  
EFFECTS STUDY.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 76 295P MUNOZ, LUIS F. ;  
REPT. NO. D6-44145  
CONTRACT: DOT-FA71WA-2637  
MONITOR: FAA-RD 76-110

UNCLASSIFIED REPORT

DESCRIPTORS: \*JET ENGINE NOISE, \*TURBOFAN ENGINES,  
JET TRANSPORT PLANES, CONFIGURATIONS, EJECTORS,  
SUPPRESSION, FANS, JETS, AXIAL FLOW FANS, JET  
ENGINE NACELLES, INSTALLATION, EXTERNAL STORES,  
STATIC TESTS, FLIGHT TESTING

(U)

IDENTIFIERS: BOEING 727-100 AIRCRAFT, BOEING 727  
AIRCRAFT, JT-8D AIRCRAFT, EJECTOR SUPPRESSORS,  
FLIGHT NOISE

(U)

A STUDY WAS CONDUCTED TO DEFINE SPECIFIC GROUND-TO-  
FLIGHT EFFECTS ON THE NOISE OF A LOW-BYPASS-RATIO  
ENGINE. THE ANALYSIS WAS BASED ON ACOUSTIC DATA  
RECORDED DURING THE FAA-SPONSORED 727 NOISE  
RETROFIT FEASIBILITY PROGRAM. TWO  
CONFIGURATIONS, A BASELINE AND AN EJECTOR SUPPRESSOR  
NACELLE, WERE INCLUDED IN THE STUDY. NOISE FLIGHT  
EFFECTS WERE OBTAINED BY COMPARING JT8D GROUND  
STATIC AND 727/JT8D FLIGHT ACOUSTIC DATA.  
PROCEDURES ARE DEFINED FOR NORMALIZING STATIC AND  
FLIGHT DATA TO COMMON CONDITIONS. THE ANALYSIS  
CONSIDERED BOTH JET AND FAN NOISE CHARACTERISTICS FOR  
FIVE ENGINE POWER SETTINGS. THE RESULTS OF THIS  
STUDY WILL PROVIDE A GUIDELINE FOR ESTABLISHING  
FLIGHT EFFECTS TECHNOLOGY. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A032 028 20/1 1/3  
MAN-ACOUSTICS AND NOISE INC SEATTLE WASH

NOISE CERTIFICATION CONSIDERATIONS FOR  
HELICOPTERS BASED ON LABORATORY  
INVESTIGATIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.

JUL 76 108P

REPT. NO. MAN-1014

CONTRACT: DOT-FA74WAI-490

MONITOR: FAA-RD 76-116

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT DATED NOV 75, AD-  
A018 036.

DESCRIPTORS: \*NOISE POLLUTION, \*HELICOPTERS,  
\*SHORT TAKEOFF AIRCRAFT, \*PSYCHOPHYSICS, AIRCRAFT  
NOISE, ACOUSTIC MEASUREMENT, HUMAN FACTORS  
ENGINEERING, INTENSITY, EXPOSURE(GENERAL),  
STATISTICAL PROCESSES, SIMULATION, MODELS,  
ANALYSIS OF VARIANCE, ENVIRONMENTAL PROTECTION,  
EXPERIMENTAL DATA, COMMUNITY RELATIONS, LABORATORY  
TESTS

(U)

IDENTIFIERS: ANNOYANCE, NOISE LEVELS,  
CERTIFICATION

(U)

THIS IS THE SECOND PART OF A PROGRAM CONCERNING  
NOISE CERTIFICATION FOR V/STOL AND HELICOPTER  
AIRCRAFT. ASPECTS CONSIDERED WERE: AN  
ENGINEERING CALCULATION PROCEDURE WHICH VALIDLY AND  
RELIABLY REFLECTS ANNOYANCE TO HELICOPTER OPERATIONS;  
ESTIMATES OF NOISE EXPOSURE LEVELS WHICH COULD BE  
COMPATIBLE WITH HUMAN ACTIVITIES IN AREAS SURROUNDING  
HELIPORTS; NOISE EXPOSURE MODELING FOR HELICOPTER  
NOISE; CERTIFICATION MEASUREMENT APPROACHES FOR  
HELICOPTER NOISE CERTIFICATION. THE BASICS OF THE  
PROGRAM INVOLVED HUMAN RESPONSE EVALUATIONS OF  
CONVENTIONAL TAKEOFF AND LANDING (CTOL) AIRCRAFT  
NOISE, SIMULATIONS OF HELICOPTER NOISE EMPHASIZING  
'SLAP' OR PULSATING NOISE EFFECTS, AND RECORDINGS OF  
A WIDE VARIETY OF HELICOPTER OPERATIONS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A032 478 20/1  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME I. SUMMARY.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 6 NOV 72-6 NOV  
75,

SEP 76 140P PLUMBLEE, HARRY E. , JR;  
REPT. NO. LG76ER0133-VOL-1  
CONTRACT: F33615-73-C-2032  
PROJ: AF-3066  
TASK: 306614  
MONITOR: AFAPL TR-76-65-VOL-1

UNCLASSIFIED REPORT

DESCRIPTORS: \*JET PLANE NOISE, \*SUPERSONIC AIRCRAFT,  
NOISE GENERATORS, NOISE POLLUTION, SOUND  
TRANSMISSION, AERODYNAMIC NOISE, MATHEMATICAL  
MODELS, THEORY, TURBULENCE, FAR FIELD,  
MEASUREMENT, EXPERIMENTAL DATA, NUMERICAL METHODS  
AND PROCEDURES  
IDENTIFIERS: TURBULENT MIXING

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(U)

THIS VOLUME CONTAINS A SUMMARY OF ALL THE WORK  
ACCOMPLISHED IN A DETAILED INVESTIGATION OF THE NOISE  
CHARACTERISTICS OF SUPERSONIC JET AIRCRAFT, AS WELL  
AS A SUMMARY OF ITEMS IN AN EXPLORATORY PROGRAM.  
THERE ARE THREE MAIN SECTIONS. THE FIRST  
SUMMARIZES THE PROBLEMS WITH EXISTING THEORIES AT THE  
TIME THE CONTRACT WAS INITIATED. THE SECOND  
OUTLINES THE CRITERIA FOR A UNIFIED SELF-CONSISTENT  
THEORY OF AERODYNAMIC NOISE GENERATION, AND PRESENTS,  
A BRIEF DERIVATION OF LILLEY'S EQUATION WHICH IS  
THE BASIS FOR THE THEORETICAL STUDIES IN JET NOISE  
GENERATION AND RADIATION. THE THIRD SECTION  
SUMMARIZES THE WORK ACCOMPLISHED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A032 881 20/1 21/5  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME II. STUDIES OF JET  
NOISE, TURBULENCE STRUCTURE AND LASER  
VELOCIMETRY.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 6 NOV 72-6 NOV  
75,

JUN 76 472P PLUMBLEE, HARRY E., JR.;  
BURRIN, ROBERT H.; LAU, JARK C.; MORFEY,  
CHRISTOPHER L.; MORRIS, PHILIP J.;  
REPT. NO. LG76ER0133-VOL-2  
CONTRACT: F33615-73-C-2032  
PROJ: 3066  
TASK: 14  
MONITOR: AFAPL TR-76-65-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-A032  
882.

DESCRIPTORS: \*JET ENGINE NOISE, \*JET ENGINE EXHAUST,  
SUPERSONIC FLOW, JET FLOW, NOISE(SOUND),  
SHOCK, TURBULENCE, TURBULENT DIFFUSION, SOURCES,  
EXHAUST NOZZLES, JET MIXING FLOW, RADIATED NOISE,  
FLOW FIELDS, FAR FIELD, MACH NUMBER, HOT WIRE  
ANEMOMETERS, LASER VELOCIMETERS, NOISE REDUCTION,  
NUMERICAL ANALYSIS, THEORY, TEST METHODS  
IDENTIFIERS: LILLEY THEORY, PE62203F,  
WUAFAPL30661408

(U)

(U)

THIS VOLUME DISCUSSES (1) TURBULENT MIXING  
NOISE TESTS AND OBSERVATIONS RELATIVE TO EFFECTS OF  
TEMPERATURE AND MACH NUMBER ON INTENSITY,  
DIRECTIVITY, AND SPECTRA; (2) NUMERICAL SOLUTIONS  
OF THE LILLEY THEORY FOR SOUND RADIATED FROM POINT  
SOURCES SIMULATING SMALL-SCALE TURBULENCE NOISE  
SOURCES, AND COMPARISONS OF THESE SOLUTIONS WITH  
EXPERIMENTAL DATA RELATING TO TEMPERATURE AND  
VELOCITY EFFECTS ON DIRECTIVITY AND SPECTRA; (3)  
THE THEORY DESCRIBING THE DEVELOPMENT OF THE LARGE-  
SCALE COHERENT MOTION OF THE JET STRUCTURE AND THE  
FAR-FIELD NOISE RADIATED FROM THIS TURBULENCE;  
(4) A DETAILED DISCUSSION AND INTERPRETATION OF  
THE JET TURBULENCE AND MEAN VELOCITY DATA; AND  
(5) A COMPREHENSIVE DESCRIPTION OF THE SHOCK-  
ASSOCIATED NOISE TESTS; A PRELIMINARY DESCRIPTION OF  
THE BROADBAND SHOCK-ASSOCIATED NOISE MODEL,

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A032 882 20/1 21/5  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME III. TURBULENT MIXING  
NOISE DATA.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 6 NOV 72-6 NOV  
75,

JUN 76 470P TANNA, H. K. ; DEAN, PETER  
D. ; BURRIN, ROBERT H. ;  
REPT. NO. LG76ER0133-VOL-3  
CONTRACT: F33615-73-C-2032  
PROJ: 3066  
TASK: 14  
MONITOR: AFAPL TR-76-65-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 4, AD-A032  
883.

DESCRIPTORS: \*JET ENGINE NOISE, \*JET ENGINE EXHAUST,  
\*TURBULENT DIFFUSION, CONVERGENT DIVERGENT NOZZLES,  
EXHAUST NOZZLES, RADIATED NOISE, HIGH PRESSURE,  
HIGH TEMPERATURE, SUPERSONIC FLOW, JET MIXING  
FLOW, NOISE(SOUND), TURBULENCE, FAR FIELD,  
SPECTRUM ANALYSIS, MACH NUMBER, ANECHOIC CHAMBERS,  
TEST METHODS, TABLES(DATA)

(U)

IDENTIFIERS: 1/3 OCTANE ANALYSIS, PE62203F,  
WUAFAPL30661408

(U)

THE CHARACTERISTICS, BOTH SPECTRAL AND DIRECTIVITY,  
OF THE SOUND FIELD OF SUPERSONIC SHOCK-FREE JETS ARE  
STUDIED BY MEASURING THE TURBULENT MIXING NOISE IN  
THE FAR FIELD FROM FOUR TWO-INCH DIAMETER NOZZLES,  
NAMELY A CONVERGENT NOZZLE FOR PRESSURE RATIOS UP TO  
CRITICAL AND THREE CONVERGENT-DIVERGENT NOZZLES  
HAVING NOMINAL DESIGN MACH NUMBERS OF 1.4, 1.7, AND  
2.0, RESPECTIVELY. THE MEASUREMENTS WERE CONDUCTED  
IN A FREE-FIELD ENVIRONMENT. THE RESULTS FROM 75  
JET EXIT CONDITIONS ARE PRESENTED IN A SYSTEMATIC  
MANNER IN THE FORM OF TABULATED ONE-THIRD OCTAVE  
SPECTRA. THE TEST PROGRAM WAS CAREFULLY PLANNED IN  
ORDER TO OBTAIN RESULTS (I) AT CONSTANT JET  
EFFLUX TEMPERATURE WITH VARYING JET VELOCITY, AND  
CONVERSELY (II) AT CONSTANT EXIT VELOCITY WHILE  
VARYING JET EFFLUX TEMPERATURE. THE EFFECTS OF JET  
VELOCITY AND EXHAUST TEMPERATURE ON TURBULENT MIXING  
NOISE CAN THEREFORE BE ASSESSED INDEPENDENTLY.

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A032 883 20/1 21/5  
LOCKHEED-GEORGIA CO MARIETTA

THE GENERATION AND RADIATION OF SUPERSONIC  
JET NOISE. VOLUME IV. SHOCK-ASSOCIATED  
NOISE DATA.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 6 NOV 72-6 NOV  
75,

JUN 76 416P TANNA, H. K. ; DEAN, PETER  
D. ; BURRIN, ROBERT H. ;  
REPT. NO. LG76ER0133-VOL-4  
CONTRACT: F33615-73-C-2032  
PROJ: 3066  
TASK: 14  
MONITOR: AFAPL TR-76-65-VOL-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A032  
881.

DESCRIPTORS: \*JET ENGINE NOISE, \*JET ENGINE EXHAUST,  
EXHAUST NOZZLES, NOISE REDUCTION,  
NOISE(SOUND), SHOCK, BROADBAND, SPECTRUM  
ANALYSIS, NARROWBAND, GRAPHS, TEST METHODS, DATA  
REDUCTION

(U)

IDENTIFIERS: UNDEREXPANDED JET FLOW, SCREECH  
SUPPRESSION, PE62203F, WUAFAPL30661408

(U)

THE CHARACTERISTICS OF THE SOUND FIELD OF SHOCK-  
CONTAINING UNDER-EXPANDED JETS ARE STUDIED BY  
MEASURING THE NOISE FROM A TWO-INCH DIAMETER  
CONVERGENT NOZZLE OVER AN EXTENSIVE ENVELOPE OF  
SUPERCRITICAL JET OPERATING CONDITIONS. THE  
MEASUREMENTS, WHICH ARE ACCURATE AND COMPREHENSIVE,  
WERE CONDUCTED IN THE LOCKHEED ANECHOIC FACILITY.  
THE RESULTS ARE PRESENTED IN THIS VOLUME IN A  
SYSTEMATIC MANNER IN THE FORM OF NARROWBAND SPECTRA.  
THE DETAILS PERTINENT TO THE EXPERIMENTAL PROGRAM  
AND THE DATA PRESENTATION FORMAT ARE SUMMARIZED  
BELOW. THE TOTAL NOISE SPECTRUM FROM AN INCORRECTLY  
EXPANDED JET FLOW CONTAINS DISCRETE COMPONENTS (OR  
SCREECH) IN ADDITION TO THE BASIC TURBULENT MIXING  
NOISE AND THE BROADBAND SHOCK-ASSOCIATED NOISE. IN  
ORDER TO STUDY THE TRENDS AND DEPENDENCIES OF THE  
BROADBAND COMPONENT ACCURATELY, IT IS VITAL TO KEEP  
THE CONTAMINATION BY SCREECH TO A MINIMUM IN THE  
EXPERIMENTAL PROGRAM. IN THE PRESENT EXPERIMENTS,  
SCREECH SUPPRESSION WAS SUCCESSFULLY ACHIEVED BY  
WRAPPING ALL SURFACES SURROUNDING THE NOZZLE EXIT  
WITH SOUND ABSORBING MATERIAL,

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A033 188 1/3 20/1 17/1  
LOCKHEED-GEORGIA CO MARIETTA

ACOUSTIC EMISSION STRUCTURE-BORNE NOISE  
MEASUREMENTS ON AIRCRAFT DURING FLIGHT.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 20 MAY-20 NOV 74,  
MAY 76 91P LEWIS, W. H. , JR.; BAILEY,  
C. D. ; PLESS, W. M. ;  
REPT. NO. LG74ER0147  
CONTRACT: F33657-74-C-0588  
PROJ: 7381  
TASK: 07  
MONITOR: AFML TR-75-185

UNCLASSIFIED REPORT

DESCRIPTORS: \*TRANSPORT AIRCRAFT, \*ACOUSTIC  
EMISSIONS, \*STRUCTURAL RESPONSE, \*AIRCRAFT NOISE,  
FLIGHT TESTING, PIEZOELECTRIC TRANSDUCERS,  
PREAMPLIFIERS, MEASUREMENT, SIGNAL TO NOISE RATIO,  
AIR FLOW, JET ENGINE NOISE, FLIGHT CONTROL  
SYSTEMS, MINICOMPUTERS, SIGNAL PROCESSING, CRACK  
PROPAGATION, SWEEP FREQUENCY TECHNIQUES, SPECTRUM  
ANALYZERS, NONDESTRUCTIVE TESTING, INSPECTION  
IDENTIFIERS: C-5A AIRCRAFT, PE62102F

(U)

(U)

THIS JOINT PROGRAM BETWEEN THE LOCKHEED-GEORGIA  
COMPANY AND THE AIR FORCE MATERIALS  
LABORATORY WAS CONCERNED WITH MEASURING THE  
STRUCTURE-BORNE NOISE BACKGROUND IN A LARGE AIRCRAFT  
DURING FOUR TEST FLIGHTS TO DETERMINE THE FEASIBILITY  
FROM A SIGNAL-TO-NOISE STANDPOINT OF USING ACOUSTIC  
EMISSION TECHNIQUES TO MONITOR STRUCTURE DURING  
FLIGHT. MEASUREMENTS WERE MADE IN THE FREQUENCY  
RANGE FROM 0.1 MHZ TO 2.0 MHZ USING OFF-THE-SHELF  
ACOUSTIC EMISSION TRANSDUCER AND 40-DB PREAMPLIFIERS  
IN CONJUNCTION WITH A LOCKHEED-DESIGNED SPECTRUM  
ANALYZER AND A PULSE CODE MODULATION DATA SYSTEM.  
CALIBRATION AND FLIGHT DATA WERE RECORDED ON THE  
FLIGHT INSTRUMENTATION MAGNETIC TAPE RECORDER.  
TRANSDUCER AND PREAMPLIFIERS WERE INSTALLED AT NINE  
LOCATIONS ON THE AIRCRAFT INCLUDING THE WING, PYLONG,  
MAIN LANDING GEAR WELL AND THE EMPENNAGE. A  
COMMERCIAL FLAW LOCATOR SYSTEM WAS ALSO INSTALLED TO  
MONITOR THE CENTER WING LOWER SURFACE DURING THE FOUR  
FLIGHTS. THE RESULTS SHOWED THAT STRUCTURE-BORNE  
NOISE CAN VARY CONSIDERABLY OVER THE AIRCRAFT  
STRUCTURE AND THAT A SUITABLE ACOUSTIC EMISSION  
SIGNAL-TO-NOISE RATIO CAN BE ACHIEVED AT MOST  
LOCATIONS WITHIN THE FREQUENCY RANGE 0.5 MHZ,

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A033 531 1/3 21/5 6/19 20/1  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 65. T-37B AIRCRAFT, NEAR AND FAR-  
FIELD NOISE.

(U)

NOV 75 79P POWELL, ROBERT G. ;  
REPT. NO. AMRL-TR-75-50-VOL-65  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 63, AD-A029  
630.

DESCRIPTORS: \*JET ENGINE NOISE, \*BIOACOUSTICS,  
\*NOISE POLLUTION, TURBOJET ENGINES, AIRCRAFT  
NOISE, LANDING FIELDS, ACOUSTIC MEASUREMENT, NEAR  
FIELD, FAR FIELD, JET TRAINING PLANES

(U)

IDENTIFIERS: T-37 AIRCRAFT, T-37B AIRCRAFT,  
J69-T-25 ENGINES, J-69 ENGINES,  
BIOENVIRONMENTAL NOISE, \*NOISE EXPOSURE

(U)

THE USAF T-37B AIRCRAFT IS A FLIGHT TRAINER  
POWERED BY TWO J69-T-25 TURBOJET ENGINES. THIS  
REPORT PROVIDES MEASURED AND EXTRAPOLATED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS PRODUCED BY  
THIS AIRCRAFT OPERATING ON A CONCRETE RUNUP AREA FOR  
THREE POWER CONDITIONS. NEAR-FIELD DATA ARE  
REPORTED FOR FOUR LOCATIONS IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS. FAR-FIELD  
DATA MEASURED AT 19 LOCATIONS ARE NORMALIZED TO  
STANDARD METEOROLOGICAL CONDITIONS AND EXTRAPOLATED  
FROM 75-8000 METERS TO DERIVE SETS OF EQUAL-VALUE  
CONTOURS FOR THESE SAME SEVEN ACOUSTIC MEASURES AS  
FUNCTIONS OF ANGLE AND DISTANCE FROM THE SOURCE.  
REFER TO VOLUME 1 OF THIS HANDBOOK, 'USAF  
BIOENVIRONMENTAL NOISE DATA HANDBOOK, VOL  
1: ORGANIZATION, CONTENT AND APPLICATION',  
AMRL-TR-75-50(1) 1975, FOR DISCUSSION OF THE  
OBJECTIVE AND DESIGN OF THE HANDBOOK, THE TYPES OF  
DATA PRESENTED, MEASUREMENT PROCEDURES,  
INSTRUMENTATION, DATA PROCESSING, DEFINITIONS OF  
QUANTITIES, SYMBOLS, EQUATIONS, APPLICATIONS,

(U)

AD-A046 800

DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA  
ENVIRONMENTAL POLLUTION: NOISE POLLUTION-AIRPLANE NOISE.(U)  
NOV 77

F/6 5/2

UNCLASSIFIED

DDC/BIB-77/11

NL

4 OF 5  
AD  
A046 800





UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD-A033 641 1/3 5/5  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 58. U-10B IN-FLIGHT CREW NOISE,

(U)

NOV 75 10P ROSE, JUSTUS F. , JR.;  
FARINACCI, NICK A. ;  
REPT. NO. AMRL-TR-75-50-VOL-58  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 57, AD-A029  
626.

DESCRIPTORS: \*SHORT TAKEOFF AIRCRAFT, \*ACOUSTIC  
MEASUREMENT, \*PSYCHOACOUSTICS, \*AIRCRAFT NOISE,  
FLIGHT CREWS, AIR FORCE OPERATIONS,  
COUNTERINSURGENCY, FLIGHT ENVELOPE, BIOACOUSTICS,  
SOUND PRESSURE, SPEECH RECOGNITION, EAR  
PROTECTORS

(U)

IDENTIFIERS: U-10B AIRCRAFT, U-10 AIRCRAFT

(U)

THE U-10B IS A USAF SHORT-RANGE, LIGHT CARGO  
STOL AIRCRAFT USED IN COUNTER-INSURGENCY  
OPERATIONS. THE REPORT PROVIDES MEASURED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS AT FLIGHT CREW  
LOCATIONS INSIDE THIS AIRCRAFT DURING NORMAL FLIGHT  
OPERATIONS. DATA ARE REPORTED FOR ONE LOCATION IN A  
WIDE VARIETY OF PHYSICAL AND PSYCHOACOUSTIC  
MEASURES: OVERALL AND BAND SOUND PRESSURE LEVELS,  
C-WEIGHTED AND A-WEIGHTED SOUND LEVELS, PREFERRED  
SPEECH INTERFERENCE LEVEL, PERCEIVED NOISE LEVEL, AND  
LIMITING TIMES FOR TOTAL DAILY EXPOSURE OF PERSONNEL  
WITH AND WITHOUT STANDARD AIR FORCE EAR  
PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A033 642 1/3 5/5  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA. VOLUME  
59. QU-22B IN-FLIGHT CREW NOISE,

(U)

NOV 75 15P ROSE, JUSTUS F. , JR. ;  
FARINACCI, NICK A. ;  
REPT. NO. AMRL-TR-75-50-VOL-59  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 58, AD-A033  
641.

DESCRIPTORS: \*UTILITY AIRCRAFT, \*ACOUSTIC  
MEASUREMENT, \*PSYCHOACOUSTICS, \*AIRCRAFT NOISE,  
FLIGHT CREWS, AIR FORCE OPERATIONS,  
SURVEILLANCE, FLIGHT ENVELOPE, BIOACOUSTICS,  
SOUND PRESSURE, SPEECH RECOGNITION, EAR  
PROTECTORS, DRONES

(U)

IDENTIFIERS: QU-22B DRONES, U-22 AIRCRAFT

(U)

THE Q-22B IS A USAF LIGHT UTILITY AIRCRAFT  
USED FOR INFILTRATION SURVEILLANCE. THE REPORT  
PROVIDES MEASURED DATA DEFINING THE BIOACOUSTIC  
ENVIRONMENTS AT FLIGHT CREW LOCATIONS INSIDE THIS  
AIRCRAFT DURING NORMAL FLIGHT OPERATIONS. DATA ARE  
REPORTED FOR ONE LOCATION IN A WIDE VARIETY OF  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AND  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 20M09

AD-A033 643 1/3 5/5  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK.  
VOLUME 64. B-52G AIRCRAFT, NEAR AND FAR-  
FIELD NOISE, (U)

NOV 75 133P POWELL, ROBERT G. ;  
REPT. NO. AMRL-TR-75-50-VOL-64  
PROJ: AF-7231  
TASK: 723104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 63, AD-A029  
630.

DESCRIPTORS: \*BOMBER AIRCRAFT, \*ACOUSTIC  
MEASUREMENT, \*PSYCHOACOUSTICS, \*AIRCRAFT NOISE,  
FLIGHT CREWS, STRATEGIC BOMBING, TURBOJET ENGINES,  
FLIGHT ENVELOPE, BIOACOUSTICS, SOUND PRESSURE,  
SPEECH RECOGNITION, AIR FORCE OPERATIONS, EAR  
PROTECTORS (U)

IDENTIFIERS: B-52G AIRCRAFT, B-52 AIRCRAFT (U)

THE USAF B-52G AIRCRAFT IS A STRATEGIC BOMBER  
POWERED BY EIGHT J57-P-43WA TURBOJET ENGINES.  
THE REPORT PROVIDES MEASURED AND EXTRAPOLATED DATA  
DEFINING THE BIOACOUSTIC ENVIRONMENTS PRODUCED BY  
THIS AIRCRAFT OPERATING ON A CONCRETE RUNUP PAD FOR  
FIVE ENGINE/POWER CONFIGURATIONS. NEAR-FIELD DATA  
ARE REPORTED FOR EIGHT LOCATIONS IN A WIDE VARIETY  
PHYSICAL AND PSYCHOACOUSTIC MEASURES: OVERALL AN-  
BAND SOUND PRESSURE LEVELS, C-WEIGHTED AND A-  
WEIGHTED SOUND LEVELS, PREFERRED SPEECH INTERFERENCE  
LEVEL, PERCEIVED NOISE LEVEL, AND LIMITING TIMES FOR  
TOTAL DAILY EXPOSURE OF PERSONNEL WITH AND WITHOUT  
STANDARD AIR FORCE EAR PROTECTORS. FAR-FIELD  
DATA MEASURED AT 19 LOCATIONS ARE NORMALIZED TO  
STANDARD METEOROLOGICAL CONDITIONS AND EXTRAPOLATED  
FROM 75-8000 METERS TO DERIVE SETS OF EQUAL-VALUE  
CONTOURS FOR THESE SAME SEVEN ACOUSTIC MEASURES AS  
FUNCTIONS OF ANGLE AND DISTANCE FROM THE SOURCE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A035 062 20/1  
MITRE CORP MCLEAN VA

FAA INTEGRATED NOISE MODEL USER'S GUIDE,

(U)

MAR 76 105P MANSBACH, PETER A. ; MAGINNIS,  
FRANCIS X. ;  
REPT. NO. MTR-7184  
CONTRACT: DOT-FA69NS-162  
MONITOR: FAA-EQ 76-2

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*COMPUTER PROGRAMS,  
MODELS, AIRPORTS, COMPUTERS, RUNWAYS,  
PLOTTERS, ACOUSTICS, AIR TRAFFIC, FORMATS,  
COST ESTIMATES, USER NEEDS, INTEGRATED SYSTEMS  
IDENTIFIERS: FEDERAL AVIATION ADMINISTRATION,  
USERS GUIDE, SOUND LEVEL

(U)

(U)

THE FAA INTEGRATED NOISE MODEL (INM) PROVIDES A CONCEPTUALLY SIMPLE METHOD FOR CHARACTERIZING AIRCRAFT NOISE NEAR AIRPORTS. IT INCLUDES A DETERMINATION OF THE TOTAL TIME THAT THE SOUND LEVEL EXCEEDS SIX DIFFERENT THRESHOLDS, AND ALSO THE EQUIVALENT A-WEIGHTED SOUND LEVEL, L SUB EQ, AND THE DAY-NIGHT AVERAGE SOUND LEVEL, L SUB DN, AT A NUMBER OF POINTS SURROUNDING A PARTICULAR AIRPORT. EVENING AND NIGHTTIME EXPOSURES ARE BROKEN OUT SEPARATELY. THUS, SEVERAL METHODOLOGIES ARE INTEGRATED INTO A SINGLE MODEL WHICH PROVIDES A VERY COMPLETE PICTURE OF THE NOISE ENVIRONMENT. THE COMPUTER PROGRAM INMPROG IS AVAILABLE TO CALCULATE ALL OF THE ABOVE INFORMATION AND TO PRESENT IT IN TABULAR FORM. PLOTTER OUTPUT IS ALSO GENERATED, FOR CONTOURS OF EQUAL EXPOSURES TO LEVELS ABOVE 85 DBA. EQUAL L SUB DN CONTOURS MAY BE PRODUCED INSTEAD, AT THE USER'S OPTION. THIS MANUAL IS INTENDED TO GUIDE THE USER OF THE MODEL THROUGH THE PREPARATION OF DATA REQUIRED BY THIS PROGRAM. A DESCRIPTION OF THE AIRPORT AND ITS OPERATIONS MUST BE ASSEMBLED ONTO DATA FORMS. A SEPARATE CHAPTER SPECIFIES THE PUNCHED CARD FORMATS, SO THAT THE PUNCHING OF CARDS IS DISTINCT FROM THE COLLECTION OF DATA. TECHNICAL APPENDICES PROVIDE THE INFORMATION REQUIRED FOR A COMPUTER CENTER TO BRING UP AND RUN THE PROGRAM.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A036 224 13/2 6/19  
AEROSPACE MEDICAL RESEARCH LAB WRIGHT-PATTERSON AFB  
OHIO

DEVELOPMENT OF A UNIFORM APPROACH TO  
CHARACTERIZE NOISE IMPACT ON PEOPLE.

(U)

DESCRIPTIVE NOTE: JOURNAL REPRINT,  
76 10P VON GIERKE, HENNING E. ;  
REPT. NO. AMRL-TR-75-40  
PROJ: 7231  
TASK: 03

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN AVIATION, SPACE AND  
ENVIRONMENTAL MEDICINE, P45-53 JAN 76.  
SUPPLEMENTARY NOTE: PRESENTED AT ANNUAL AEROSPACE  
MEDICAL ASSOCIATION MEETING (46TH) HELD IN SAN  
FRANCISCO, CALIF., 27 APR-2 MAY 75.

DESCRIPTORS: \*NOISE POLLUTION, \*AIRCRAFT NOISE,  
POLLUTION ABATEMENT, NOISE(SOUND),  
ENVIRONMENTAL MANAGEMENT, PUBLIC HEALTH, PLANNING,  
COSTS, REPRINTS  
IDENTIFIERS: PE62202F

(U)

(U)

EFFECTIVE PLANNING REQUIRES VALID CHARACTERIZATION  
AND PREDICTION OF THE NOISE ENVIRONMENT, AN  
UNDERSTANDING OF THE ORIGIN OF THE NOISE AND THE  
CONTRIBUTION OF VARIOUS SOURCES, AND THE LEGAL POWER  
TO CONTROL NOISE GENERATION AND ENFORCE LANDING-USE  
PLANNING. AS A MATTER OF FACT, SOME OF THE  
TREMENDOUS PROGRESS MADE IN PRODUCING THE NEW,  
QUIETER GENERATION COMMERCIAL JET AIRCRAFT, SUCH AS  
THE DC10 OR L1011, IS ALMOST IN VAIN UNLESS  
PROPER LAND-USE PLANNING AROUND AIRPORTS PREVENTS  
FURTHER ENCROACHMENT OF RESIDENTIAL AREAS ON THE  
AIRPORT. A NOISE CONTROL PROGRAM WHICH DOES NOT  
ADDRESS ALL PHASES OF THE TOTAL SYSTEM-NOISE SOURCES,  
TRANSMISSION PATH TO THE RECEIVER, AND THE RECEIVER  
OF THE NOISE; I.E., THE COMMUNITIES AND THE PEOPLE IN  
THEM-MUST REMAIN EFFECTIVE.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A036 723 1/3 1/2  
MITRE CORP MCLEAN VA METREK DIV

FAA INTEGRATED NOISE MODEL DATA BASE, (U)

AUG 76 102P MANSBACH, PETER A. ;  
REPT. NO. MTR-7289  
CONTRACT: DOT-FA69NS-162  
MONITOR: FAA-EQ 76-6

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*CIVIL AVIATION,  
AIRPORTS, DATA BASES, COMPUTER PROGRAMS,  
PASSENGER AIRCRAFT, NOISE POLLUTION,  
TABLES(DATA), MATHEMATICAL MODELS (U)

THE FAA INTEGRATED NOISE MODEL COMPUTER  
PROGRAM INMPROG HAS BEEN MADE AVAILABLE TO THE  
PUBLIC FOR COMPUTING A VARIETY OF NOISE INDICES IN  
THE VICINITY OF AIRPORTS. ONE COMPONENT OF THIS  
PROGRAM PACKAGE IS A DATA LIBRARY WHICH PROVIDES BOTH  
ACOUSTIC AND OPERATIONAL DATA FOR CERTAIN STANDARD  
AIRCRAFT TYPES AND FLIGHT PROCEDURES. THIS PAPER  
PRESENTS THE DATA USED TO CONSTRUCT THE SUPPLIED  
PROGRAM LIBRARY. IT THUS PROVIDES THE INFORMATION  
NEEDED TO REPRODUCE A PARTICULAR ANALYSIS. FURTHER,  
IT PROVIDES A NECESSARY REFERENCE POINT FOR THE USER  
WHO SPECIFIES HIS OWN OPERATIONAL PROCEDURES.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 154 20/1 21/5 13/2  
INSTITUTE OF LABS JAMAICA PLAIN MASS\*

COMBUSTION NOISE INVESTIGATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

FEB 77 202P MATHEWS, D. C. ; REKOS, N.

F. , JR. ; NAGEL, R. T. ;

REPT. NO. PWA-5478

CONTRACT: DOT-FA75WA-3663

MONITOR: FAA-RD 77-3

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT ENGINE NOISE, \*COMBUSTION,  
\*TURBOFAN ENGINES, PREDICTIONS, EXPERIMENTAL DATA,  
ACOUSTIC ATTENUATION, COMBUSTORS, DUCTS,  
COUPLINGS, BURNERS, FUEL NOZZLES, TRANSMISSION  
LOSS, NOISE REDUCTION, BACKGROUND NOISE,  
MATHEMATICAL MODELS, OPTICAL ANALYSIS, TEST  
FACILITIES

(U)

IDENTIFIERS: JT-8D ENGINES, JT-9D7 ENGINES,  
JT-9D ENGINES, JT-10 ENGINES

(U)

IMPROVED METHODS FOR PREDICTING BOTH DIRECT AND  
INDIRECT COMBUSTION NOISE FROM AIRCRAFT ENGINES ARE  
DEVELOPED AND EXPERIMENTALLY EVALUATED BY CONDUCTING  
RIG EXPERIMENTS AND BY COMPARING WITH DATA FROM  
SEVERAL FULL SCALE ENGINES. COMPARISON OF  
PREDICTIONS WITH FULL SCALE ENGINE DATA INDICATED  
THAT DIRECT COMBUSTION NOISE IS THE DOMINANT SOURCE  
FOR THE P AND WA ENGINES INVESTIGATED. THE  
DIRECT COMBUSTION NOISE PREDICTION SYSTEM INCLUDES  
EXPRESSIONS FOR ACOUSTIC POWER LEVEL, PEAK FREQUENCY  
AND FULL-SCALE ENGINE ACOUSTIC TRANSMISSION LOSS DUE  
TO COMBUSTOR/DUCT COUPLING AND TURBINE ATTENUATION.  
THESE EXPRESSIONS ARE DERIVED IN TERMS OF READILY  
AVAILABLE PERFORMANCE AND GEOMETRY PARAMETERS FROM  
THE BURNER AND TURBINE. NEW PARAMETERS INTRODUCED  
BY THE PREDICTION SYSTEM INCLUDE THE EFFECTS OF FUEL  
NOZZLE NUMBER AND BURNER LENGTH. PREDICTIONS ARE  
SHOWN TO BE IN GOOD AGREEMENT WITH DATA OBTAINED FROM  
COMPONENT RIG TESTS ON SEVERAL JT8D TYPE BURNER  
CONFIGURATIONS (INCLUDING SINGLE AND MULTIPLE FUEL  
NOZZLE, CONVENTIONAL AND LOW EMISSION DESIGNS).  
IN ADDITION, WHEN TRANSMISSION LOSSES ARE ACCOUNTED  
FOR, THE PREDICTIONS ARE ALSO SHOWN TO BE IN GOOD  
AGREEMENT WITH OBSERVED COMBUSTION NOISE LEVELS AND  
PEAK FREQUENCIES FROM FOUR P AND WA TURBOFAN  
ENGINES (I.E. THE JT8D-109, JT9D-7A,  
JT9D-70 AND THE PROTOTYPE JT10D).

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 192 1/3 20/1  
KAMAN AEROSPACE CORP BLOOMFIELD CONN

HELICOPTER NOISE REDUCTION DESIGN TRADE-  
OFF STUDY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 76-JAN 77,  
JAN 77 252P BOWES, MICHAEL A. ;  
REPT. NO. R-1493  
CONTRACT: DOT-FA76WA-3791  
MONITOR: FAA-AEQ 77-4

UNCLASSIFIED REPORT

DESCRIPTORS: \*HELICOPTERS, \*AIRCRAFT NOISE, \*NOISE  
REDUCTION, AIRCRAFT ENGINE NOISE, HELICOPTER ROTORS,  
HELICOPTER ENGINES, PERFORMANCE(ENGINEERING),  
EXPERIMENTAL DESIGN, PERFORMANCE(ENGINEERING),  
MODIFICATION, TRADE OFF ANALYSES, COST ANALYSIS,  
STATE OF THE ART, COST BENEFITS

(U)

A STUDY WAS PERFORMED TO DETERMINE THE NOISE  
REDUCTION BENEFITS AND ECONOMIC COSTS ASSOCIATED WITH  
APPLYING STATE-OF-THE-ART NOISE REDUCTION METHODS TO  
FUTURE DESIGN CIVIL HELICOPTERS. AS PART OF THIS  
STUDY, A SURVEY OF THE MAKE-UP OF THE CIVIL FLEET WAS  
PERFORMED, AND THIS FLEET MAKE-UP WAS PROJECTED TO  
THE 1980 TIME FRAME. ANALYTICAL METHODS WERE  
DEVELOPED AND/OR ADOPTED FOR CALCULATING HELICOPTER  
COMPONENT NOISE, AND THESE METHODS WERE INCORPORATED  
INTO A UNIFIED TOTAL VEHICLE NOISE CALCULATION MODEL.  
ANALYTICAL METHODS WERE ALSO DEVELOPED FOR  
CALCULATING THE EFFECTS OF NOISE REDUCTION  
METHODOLOGY ON HELICOPTER DESIGN, PERFORMANCE AND  
COST. THE ANALYTICAL METHODS WERE USED TO  
CALCULATE BASELINE NOISE AND COST CHARACTERISTICS OF  
SEVERAL EXISTING CIVIL HELICOPTERS. THESE METHODS  
WERE ALSO USED TO CALCULATE CHANGES IN NOISE, DESIGN,  
PERFORMANCE AND COST DUE TO THE INCORPORATION OF  
ENGINE AND MAIN ROTOR NOISE REDUCTION METHODS. ALL  
NOISE REDUCTION TECHNIQUES WERE EVALUATED IN THE  
CONTEXT OF AN ESTABLISHED MISSION PERFORMANCE  
CRITERION WHICH INCLUDED CONSIDERATION OF HOVER  
CEILING, FORWARD FLIGHT RANGE/SPEED/PAYLOAD AND ROTOR  
STALL MARGIN. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 613 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

SUPERSONIC JET EXHAUST NOISE INVESTIGATION.  
VOLUME II. TECHNICAL REPORT.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 DEC 72-23  
SEP 75,

JUL 76 396P KNOTT, PAUL R. ; MANI, R. ;  
MERKLE, C. L. ; RIBNER, H. S. ; SCOTT, P. ;  
REPT. NO. R74AEG452-VOL-2  
CONTRACT: F33615-73-C-2031  
PROJ: 3066  
TASK: 14  
MONITOR: AFAPL TR-76-68-VOL-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 3, AD-A038  
614.

DESCRIPTORS: \*JET ENGINE NOISE, \*SUPERSONIC  
AIRCRAFT, \*SUPERSONIC FLOW, NOISE, AIRCRAFT NOISE,  
JETS, EXHAUST GASES, TURBULENCE, TURBULENT FLOW,  
FLUIDS, SHIELDING, LASER VELOCIMETERS,  
MEASUREMENT, MATHEMATICAL MODELS  
IDENTIFIERS: WUAFAPL30661407, PE62203F

(U)

(U)

THIS REPORT DISCUSSES DETAILED ACCOUNTS OF MAJOR  
THEORETICAL AND EXPERIMENTAL INVESTIGATIONS DIRECTED  
TOWARD OBTAINING BETTER UNDERSTANDING AND  
MATHEMATICAL SPECIFICATION OF SUPERSONIC TURBULENT  
JETS. COMPLETE THEORETICAL DISCUSSIONS ARE GIVEN  
DESCRIBING THE INFLUENCE OF A JET'S MEAN FLOW  
SHROUDING ON ACOUSTIC RADIATION OF HEATED AND  
UNHEATED JETS, APPROXIMATE CLOSED FORM ACOUSTIC  
EXPRESSIONS FOR TURBULENT MIXING NOISE CHARACTERIZED  
BY SELF-NOISE AND SHEAR-NOISE ARE GIVEN, AND  
THEORETICAL AERO-ACOUSTIC FORMULATIONS FOR THE  
ORDERLY STRUCTURE OF SUPERSONIC JETS ARE REVIEWED.  
EXTENSIVE THEORY/DATA COMPARISONS OF DEVELOPED  
ACOUSTIC MODELS ARE GIVEN. EXPERIMENTAL  
INVESTIGATIONS AIMED AT STUDYING HIGH VELOCITY JET  
REFRACTION, AND THE INFLUENCE OF JET SWIRL AND  
UPSTREAM COMBUSTION ROUGHNESS ON JET NOISE IS  
PRESENTED. ADDITIONALLY, AN EXTENSIVE SERIES OF  
LASER VELOCIMETER MEASUREMENTS FOR HIGH VELOCITY AND  
HIGH TEMPERATURE SIMPLE CIRCULAR JETS IS DISCUSSED.  
RESULTS INCLUDE HOT-FILM/LASER VELOCIMETER  
COMPARISONS FOR AMBIENT JETS,

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 614 20/1  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

SUPERSONIC JET EXHAUST NOISE INVESTIGATION.  
VOLUME III. COMPUTER USER'S MANUAL FOR  
AERO-ACOUSTIC PREDICTIONS.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. 1 DEC 72-23  
SEP 75,

JUL 76 683P FERGUSON, DAVID R. ; SMITH,  
MICHAEL A. ; KNOTT, PAUL R. ;  
REPT. NO. R74AEG452-VOL-3  
CONTRACT: F33615-73-C-2031  
PROJ: 3066  
TASK: 14  
MONITOR: AFAPL TR-76-68-VOL-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A038  
613.

DESCRIPTORS: \*JET ENGINE NOISE, \*SUPERSONIC FLOW,  
\*SUBSONIC FLOW, \*SUPERSONIC AIRCRAFT, \*COMPUTER  
PROGRAMS, MATHEMATICAL MODELS, MATHEMATICAL  
PREDICTION, COMPUTERIZED SIMULATION, AERODYNAMICS,  
ACOUSTICS, NOISE, AIRCRAFT NOISE, FLOW CHARTING,  
INPUT, INSTRUCTION MANUALS

(U)

IDENTIFIERS: SSNOISE COMPUTER PROGRAM, SUPERSONIC  
JET NOISE PREDICTION SYSTEM, JETMIX COMPUTER  
PROGRAM, SSFD COMPUTER PROGRAM, MERGE COMPUTER  
PROGRAM, NOISE COMPUTER PROGRAM, WUAFAPL30661407,  
PE62203F

(U)

THIS REPORT GIVES A DETAILED DESCRIPTION OF  
AERODYNAMIC (SHOCK-FREE/SHOCKED FLOW) AND  
ACOUSTIC TURBULENT MIXING COMPUTER PREDICTION  
PROGRAMS DEVELOPED BY THE GENERAL ELECTRIC  
COMPANY FOR SUBSONIC AND SUPERSONIC SIMPLE EXHAUST  
JETS. IN ADDITION TO GIVING DETAILED DESCRIPTIONS  
OF THE AEROACOUSTIC FORMULATIONS AND DISCUSSIONS OF  
COMPUTER MANUAL INSTRUCTIONS FOR OPERATING THE  
PROGRAM, EXTENSIVE THEORY/DATA COMPARISONS ARE GIVEN,  
AS WELL AS COMPUTER PROGRAM LISTINGS AND SAMPLE TEST  
CASES. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A038 682 20/1 1/3  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

SUPERSONIC JET EXHAUST NOISE INVESTIGATION.  
VOLUME I. SUMMARY REPORT.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. (FINAL), 1 DEC 72-  
23 SEP 75,

JUL 76 137P KNOTT, PAUL R. ;  
REPT. NO. R74AEG452-VOL-1  
CONTRACT: F33615-73-C-2031  
PROJ: 3066  
TASK: 14  
MONITOR: AFAPL TR-76-68-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A038  
613.

DESCRIPTORS: \*JET ENGINE NOISE, \*JET ENGINE EXHAUST,  
\*SUPERSONIC AIRCRAFT, ACOUSTIC MEASUREMENT,  
SUPERSONIC CHARACTERISTICS, MATHEMATICAL ANALYSIS,  
EXPERIMENTAL DATA, NOISE ANALYZERS, NOISE  
REDUCTION, SHOCK WAVES, FLOW FIELDS, COMPUTATIONS,  
TURBULENT FLOW, SHOCK SPECTRA, BOUNDARY LAYER  
FLOW, LASER VELOCIMETERS, CROSS CORRELATION  
IDENTIFIERS: PE62203F, WUAFAPL30661407

(U)

(U)

THIS REPORT SUMMARIZES MAJOR THEORETICAL  
AERODYNAMIC AND ACOUSTIC DEVELOPMENTS AND  
EXPERIMENTAL FINDINGS AIMED AT PROVIDING A BETTER  
UNDERSTANDING AND A DETAILED MATHEMATICAL  
SPECIFICATION OF THE NOISE-PRODUCING SOURCES OF  
SIMPLE EXHAUST JETS. A REVIEW IS GIVEN OF  
CALCULATION PROCEDURES FOR SHOCK WAVE STRUCTURE AND  
FLOW FIELD PROPERTIES OF SIMPLE CIRCULAR JETS.  
RESULTS OF NEW THEORETICAL ACOUSTIC DEVELOPMENTS  
ILLUSTRATING THE INFLUENCE OF A JET'S MEAN FLOW  
SHROUDING ON JET ACOUSTIC RADIATION FOR UNHEATED AND  
HEATED JETS ARE OUTLINED. ADDITIONAL DISCUSSIONS OF  
INTERESTING INSIGHTS REGARDING THE CLASSICAL  
TURBULENT MIXING THEORY OF JET NOISE AND THE  
AEROACOUSTIC FORMULATIONS FOR A JET'S ORDERLY  
STRUCTURE ARE GIVEN. SUMMARIES OF A SERIES OF HIGH  
VELOCITY, HIGH TEMPERATURE VELOCITY FIELD  
MEASUREMENTS USING A GENERAL ELECTRIC DEVELOPED  
LASER VELOCIMETER ARE DISCUSSED, AND THE APPLICATION  
OF THE VELOCIMETER FOR PERFORMING TURBULENCE SPECTRA  
AND IN-JET TO FAR-FIELD CROSS-CORRELATION TYPE  
MEASUREMENTS IS REVIEWED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A039 664 20/1 1/3  
UNITED TECHNOLOGIES RESEARCH CENTER EAST HARTFORD CONN

AIRFRAME NOISE PREDICTION METHOD. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 76-APR 77,  
MAR 77 141P FINK, MARTIN R. ;  
REPT. NO. UTRC/R77-912607-11  
CONTRACT: DOT-FA76WA-3821  
MONITOR: FAA-RD 77-29

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*AIRFRAMES,  
TURBULENT BOUNDARY LAYER, NOISE(SOUND),  
INTENSITY, POWER SPECTRA, DEFLECTION, COMPUTER  
PROGRAMS, MATHEMATICAL PREDICTION, FOURIER  
TRANSFORMATION, LEADING EDGES, TRAILING EDGES,  
FLAPS(CONTROL SURFACES), WINGS, LANDING GEAR,  
NOISE REDUCTION (U)

A NOISE COMPONENT METHOD IS PRESENTED FOR  
CALCULATING AIRFRAME NOISE. NOISE FROM CLEAN WING  
AND TAIL SURFACE IS REPRESENTED AS TRAILING EDGE  
NOISE CAUSED BY THE TURBULENT BOUNDARY LAYER.  
LANDING GEAR NOISE IS GIVEN BY AN EMPIRICAL  
REPRESENTATION OF MODEL DATA. TRAILING EDGE FLAP  
NOISE IS MODELED AS A LIFT DIPOLE NORMAL TO THE  
DEFLECTED FLAP, WITH AMPLITUDE AND SPECTRUM GIVEN BY  
A CORRELATION OF FLYOVER DATA. MEASURED FLYOVER  
DATA FOR THE PRUE-2 SAILPLANE, AERO COMMANDER  
SHIRKE GENERAL AVIATION AIRPLANE, LOCKHEED  
JETSTAR BUSINESS JET, BOEING 747 COMMERCIAL  
JET, AND CONVAIR F-106B DELTA WING AIRPLANE ARE  
USED AS TEST CASES. THESE SPECTRA ARE COMPARED WITH  
PREDICTIONS BY THIS METHOD AND THE NASA ANOPP  
TOTAL AIRCRAFT METHOD AND DRAG ELEMENT METHOD.  
METHODS FOR REDUCING VARIOUS COMPONENTS OF AIRFRAME  
NOISE ARE EXAMINED AND EVALUATED. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A039 715 1/3 20/1  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

PHYSICAL ANALYSIS OF THE IMPULSIVE ASPECTS OF  
HELICOPTER NOISE.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 77 394P GALLOWAY, WILLIAM J. ;  
REPT. NO. BBN-3425  
CONTRACT: WI-77-3683-1  
MONITOR: FAA-EQ 77-8

UNCLASSIFIED REPORT

DESCRIPTORS: \*HELICOPTERS, \*AIRCRAFT NOISE,  
\*IMPULSE NOISE, NOISE, NOISE POLLUTION,  
NOISE(SOUND), MEASUREMENT, FRANCE, GREAT  
BRITAIN, SOUTH AFRICA, UNITED STATES,  
PSYCHOACOUSTICS, EXPERIMENTAL DATA

(U)

AN EVALUATION IS MADE OF SEVERAL HELICOPTER FLYOVER  
NOISE CALCULATION SCHEMES INTENDED TO DESCRIBE SIGNAL  
IMPULSIVE CHARACTER. THESE SCHEMES WERE PROPOSED BY  
ICAO MEMBER ORGANIZATIONS. DATA ARE PRESENTED FOR  
VARIOUS RECORDED FLYOVERS AND FOR SIMULATIONS OF  
HELICOPTER FLYOVERS. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A039 957 21/5 20/1  
PRINCETON UNIV N J DEPT OF AEROSPACE AND MECHANICAL  
SCIENCES

RESEARCH ON NOISE GENERATED BY DUCTED AIR-  
FUEL COMBUSTION SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 71-MAR 77,  
MAR 77 29P PLETT, E. G. ; SUMMERFIELD,  
M. ;  
REPT. NO. AMS-1327  
CONTRACT: N00014-67-A-0151-0029, N00014-75-C-0507

UNCLASSIFIED REPORT

DESCRIPTORS: \*JET ENGINE NOISE, \*DUCTS,  
\*COMBUSTION, \*COMBUSTORS, MATHEMATICAL MODELS,  
EXHAUST GASES, GAS FLOW (U)

THROUGHOUT THE RESEARCH PROGRAM, EMPHASIS HAS BEEN  
PLACED ON OBTAINING A BETTER UNDERSTANDING OF THE  
IMPORTANCE OF COMBUSTION AS A SOURCE OF NOISE IN JET  
ENGINES. THIS HAS BEEN PURSUED IN TERMS OF  
THEORETICAL MODELING AND EXPERIMENTAL INVESTIGATIONS.  
A THEORETICAL MODEL WAS DEVELOPED TO ALLOW  
COMPUTATION OF THE ROLE INTERNAL SOURCES AS WELL AS  
EXTERNAL SOURCES. CALCULATIONS BASED ON REASONABLE  
APPROXIMATIONS INDICATED THAT FOR SUBSONIC JET  
VELOCITIES, INTERNAL SOURCES COULD BE MUCH MORE  
IMPORTANT THAN THE JET NOISE SOURCES. EXPERIMENTS  
IN A COLD FLOW WITH CYLINDRICAL STRUTS IMMERSED IN  
THE FLOW TO GENERATE UNSTEADINESS DEMONSTRATED THIS  
EFFECT. MORE TO THE POINT, EXPERIMENTS WITH A  
DUCTED COMBUSTOR ALSO VERIFIED THAT THE COMBUSTION,  
THOUGH OCCURRING INSIDE THE DUCT, CAUSES UNSTEADINESS  
IN THE EXHAUST FLOW WHICH IS DIRECTLY RESPONSIBLE FOR  
NOISE GENERATION. THE NOISE THUS ATTRIBUTABLE TO  
THE COMBUSTION WAS FOUND TO BE DOMINANT OVER JET  
NOISE FOR SUBSONIC JETS TO MACH NUMBERS OF  
APPROXIMATELY 0.6. A UNIFIED THEORY OF COMBUSTION  
NOISE GENERATION WAS DEVELOPED. DIRECT  
VERIFICATION OF THE IMPORTANCE OF THE VARIOUS SOURCE  
TERMS WAS BEGUN. INITIAL RESULTS SUGGEST THAT AT  
LEAST SEVERAL OF THE TERMS ARE IMPORTANT. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A040 561 1/3 20/1  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS  
RESEARCH AND DEVELOPMENT SERVICE

HELICOPTER NOISE MEASUREMENTS DATA REPORT.  
VOLUME I. HELICOPTER MODELS: HUGHES 300-  
C. HUGHES 500-C, BELL 47-G, BELL 206L,

(U)

APR 77 384P TRUE, HAROLD C. LETTY,  
RICHARD M. ;  
REPT. NO. FAA-RD-77-57-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-A040  
562.

DESCRIPTORS: \*AIRCRAFT NOISE, \*HELICOPTERS, DATA  
BASES, HOVERING, LEVEL FLIGHT, APPROACH, GLIDE  
SLOPE

(U)

IDENTIFIERS: HUGHES 300-C AIRCRAFT, HUGHES 500-  
C AIRCRAFT, BELL 47-G AIRCRAFT, BELL 206-L  
AIRCRAFT

(U)

THIS DATA REPORT CONTAINS THE MEASURED NOISE LEVELS  
OBTAINED FROM AN FAA HELICOPTER NOISE TEST  
PROGRAM. THE PURPOSE OF THIS TEST PROGRAM WAS TO  
PROVIDE A DATA BASE FOR A POSSIBLE HELICOPTER NOISE  
CERTIFICATION RULE. THE NOISE DATA PRESENTED IN  
THIS TWO VOLUME REPORT IS PRIMARILY INTENDED AS A  
MEANS TO DISSEMINATE THE AVAILABLE INFORMATION.  
ONLY THE MEASURED DATA IS PRESENTED IN THIS REPORT.  
ALL FAA/DOT DATA ANALYSIS AND COMPARISONS WILL  
BE PRESENTED IN A LATER REPORT WHICH IS SCHEDULED FOR  
DISTRIBUTION IN JULY, 1977. THE EIGHT HELICOPTERS  
TESTED DURING THIS HELICOPTER NOISE TEST  
PROGRAM CONSTITUTED A WIDE RANGE OF GROSS WEIGHTS  
AND INCLUDED PARTICIPATION FROM SEVERAL HELICOPTER  
MANUFACTURERS. THE HELICOPTER MODELS USED IN THIS  
TEST PROGRAM WERE THE HUGHES 300C, HUGHES  
500C, BELL 47-G, BELL 206-L, BELL 212  
(UH-1N), SIKORSKY S-61 (SH-3A),  
SIKORSKY S-64 'SKYCRANE' (CH-54B), AND  
BOEING VERTOL 'CHINOOK' CH-47C. VOLUME  
I CONTAINS THE MEASURED NOISE LEVELS OBTAINED FROM  
THE FIRST FOUR HELICOPTERS WHILE VOLUME II  
CONTAINS THE DATA FROM THE REMAINING FOUR. THE TEST  
PROCEDURE FOR EACH HELICOPTER CONSISTED OF OBTAINING  
NOISE DATA DURING HOVER, LEVEL FLYOVER, AND APPROACH  
CONDITIONS. THE DATA PRESENTED IN THIS REPORT  
CONSISTS OF TIME HISTORIES,

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A040 562 1/3 20/1  
FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTEMS  
RESEARCH AND DEVELOPMENT SERVICE

HELICOPTER NOISE MEASUREMENTS DATA REPORT.  
VOLUME II. HELICOPTER MODELS: BELL 212  
(UH-1N), SIKORSKY S-61 (SH-3A),  
SIKORSKY S-64 'SKYCRANE' (CH-54B), BOEING  
VERTOL 'CHINOOK' (CH-47C),

(U)

APR 77 420P TRUE, HAROLD C. LETTY,  
RICHARD M. ;  
REPT. NO. FAA-RD-77-57-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A040  
561.

DESCRIPTORS: \*AIRCRAFT NOISE, \*HELICOPTERS, DATA  
BASES, HOVERING, LEVEL FLIGHT, APPROACH, GLIDE  
SLOPE

(U)

IDENTIFIERS: UH-1N AIRCRAFT, SH-3A AIRCRAFT,  
CH-54B AIRCRAFT, CH-47C AIRCRAFT, H-1  
AIRCRAFT, H-3 AIRCRAFT, H-54 AIRCRAFT, H-47  
AIRCRAFT

(U)

THE HELICOPTER MODELS USED IN THIS TEST PROGRAM  
WERE THE HUGHES 300C, HUGHES 500C, BELL 47-  
G, L 206-L, BELL 212 (UH-1N),  
SIKORSKY S-61 (SH-3A), SIKORSKY S-64  
'SKYCRANE' (CH-54B), AND BOEING VERTOL  
'CHINOOK' CH-47C. VOLUME I CONTAINS THE  
MEASURED NOISE LEVELS OBTAINED FROM THE FIRST FOUR  
HELICOPTERS WHILE VOLUME II CONTAINS THE DATA  
FROM THE REMAINING FOUR.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A041 400 20/1 13/2 5/2  
DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA

ENVIRONMENTAL POLLUTION: NOISE POLLUTION -  
SONIC BOOM.

(U)

DESCRIPTIVE NOTE: REPORT BIBLIOGRAPHY APR 59-JUL 76.  
JUN 77 201P  
REPT. NO. DDC/BIB-77/06

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPT. NO. DDC-TAS-73-  
74 DATED NOV 73, AD-769 970.

DESCRIPTORS: \*SONIC BOOM, \*NOISE POLLUTION, \*JET  
PLANE NOISE, \*BIBLIOGRAPHIES, SUPERSONIC AIRCRAFT,  
JET TRANSPORT PLANES, PUBLIC OPINION,  
PSYCHOACOUSTICS, JET AIRCRAFT, SHOCK WAVES,  
ABSTRACTS, METEOROLOGICAL PHENOMENA,  
LAW(JURISPRUDENCE), AIRCRAFT NOISE,  
PHYSIOLOGICAL EFFECTS, REACTION(PSYCHOLOGY),  
ENVIRONMENTAL PROTECTION

(U)

THIS BIBLIOGRAPHY CONTAINS CITATIONS OF STUDIES AND  
ANALYSES COVERING A WIDE RANGE OF THE PARAMETER OF  
SONIC BOOM AND NOISE POLLUTION, AS WELL AS DAMAGES  
CAUSED BY IT. CORPORATE AUTHOR-MONITORING  
AGENCY, SUBJECT, TITLE AND PERSONAL AUTHOR  
ARE PROVIDED. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A041 674 20/1 1/5  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

VALIDATION OF AIRCRAFT NOISE EXPOSURE  
PREDICTION PROCEDURE.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 77 87P SEIDMAN, HARRY ; HORONJEFF,  
RICHARD D. ; BISHOP, DWIGHT E. ;  
REPT. NO. BBN-3299  
CONTRACT: F33615-76-C-5003  
PROJ: 7231  
TASK: 04  
MONITOR: AMRL TR-76-111

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*AIRPORTS, \*NOISE  
POLLUTION, EXPOSURE(GENERAL), COMMUNITY  
RELATIONS, MATHEMATICAL PREDICTION, COMPUTERIZED  
SIMULATION, PLANNING, ESTIMATES, ACCURACY,  
ALGORITHMS  
IDENTIFIERS: WUAMRL723104030, PE62202F

(U)

(U)

THE NOISEMAP PREDICTIVE PROCEDURE IS USED TO  
DESCRIBE THE NOISE ENVIRONMENT AROUND AIRBASES AND  
THEREBY AID AIRBASE PLANNERS TO PREVENT COMMUNITY  
ENCROACHMENT LIMITING THE EFFECTIVENESS OF THE  
INSTALLATION. THIS REPORT DELINEATES THE RESULTS OF  
MEASUREMENTS MADE OVER ONE TO THREE WEEK PERIODS AT  
FOUR AIR FORCE AIRBASES TO ACQUIRE THE DATA  
NEEDED TO VALIDATE AND/OR MODIFY THE NOISE PREDICTIVE  
ALGORITHMS IN NOISEMAP FOR TAKEOFF, LANDING,  
TRAFFIC PATTERN, AND GROUND RUNUP OPERATIONS. IN  
GENERAL, THE ALGORITHMS CURRENTLY USED IN NOISEMAP  
PROVIDED PREDICTIONS THAT AGREED WELL WITH MEASURED  
DATA. IT WAS FOUND THE OBTAINING ACCURATE DATA ON  
AIRCRAFT OPERATIONAL PROCEDURES (ENGINE POWER  
SETTINGS, AIRSPEEDS, AND FLIGHT PATHS) WAS  
ESSENTIAL.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A041 781 20/1 1/5  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

FURTHER SENSITIVITY STUDIES OF COMMUNITY-  
AIRCRAFT NOISE EXPOSURE (NOISEMAP) PREDICTION  
PROCEDURES. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 77 88P BISHOP, DWIGHT E. ;  
DUNN THOMAS C. ; HORONJEFF, RICHARD D. ;  
MILLER  
REPT. 95  
CONTRACT 3-76-C-0507  
PROJ: 7281  
TASK: 04  
MONITOR: AMRL TR-76-116

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*AIRPORTS, \*NOISE  
POLLUTION, PLANNING, COMMUNITY RELATIONS, MODELS,  
COMPUTER PROGRAMS, AIR FORCE FACILITIES,  
EXPOSURE (GENERAL), ACOUSTIC ATTENUATION,  
CLIMATE (U)

IDENTIFIERS: NOISEMAP COMPUTER PROGRAMS,  
WUAMRL72310428, PE62202F (U)

THIS REPORT DESCRIBES THE RESULTS OF STUDIES OF THE  
SENSITIVITY OF THE NOISE EXPOSURE CONTOURS TO VARIOUS  
MODEL PARAMETERS AND ASSUMPTIONS PRESENTLY IN THE  
NOISEMAP PROCEDURE. THE AREAS WITHIN DAY/  
NIGHT LEVEL (LDN) CONTOURS FOR TEN AIR  
FORCE AIRBASES INCREASED BY 11 TO 40 PERCENT WHEN  
THE NOISE MEASURE WAS ADJUSTED FOR THE PRESENCE OF  
PURE TONES. THE CONTOUR AREAS FOR TYPICAL MIXED  
FIGHTER, BOMBER/TANKER, AND TRAINING AIRBASES WERE  
REDUCED BY 3 TO 11 PERCENT BY SUBSTITUTION OF THE  
SAE ALGORITHMS FOR GROUND-TO-GROUND PROPAGATION AND  
TRANSITION MODELS, WHEREAS ADDING THE FUSELAGE  
SHIELDING ALGORITHM REDUCED THE CONTOUR AREAS BY 13  
TO 22 PERCENT. SINCE THERE IS LITTLE FIRM EVIDENCE  
SHOWING ONE SET OF ALGORITHMS MORE ACCURATE THAN THE  
OTHER, THE PRESENT NOISEMAP MODELS WILL BE RETAINED  
UNTIL FURTHER TECHNICAL ANALYSES OR NEW DATA SHOW A  
CLEAR BASIS FOR ALTERATION. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z0M09

AD-A041 782 21/5 20/1 1/3  
TENNESSEE UNIV SPACE INST TULLAHOMA

INVESTIGATION OF FEASIBLE NOZZLE  
CONFIGURATIONS FOR NOISE REDUCTION IN  
TURBOFAN AND TURBOJET AIRCRAFT. VOLUME  
III. SHROUDED SLOT NOZZLE  
CONFIGURATIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 75-MAR 77,  
MAR 77 116P GOETHERT, B. H. ; MAUS, J.  
R. ; DUNNILL, WILLIAM A. ; JOSHI, M. C. ;  
VEERASAMY, V. ;  
CONTRACT: DOT-FA72WA-3053  
MONITOR: FAA-RD 75-162-3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 1, AD-A024  
958.

DESCRIPTORS: \*JET ENGINE NOISE, \*TURBOFAN ENGINES,  
\*TURBOJET ENGINES, \*NOISE REDUCTION, \*THRUST  
AUGMENTOR NOZZLES, \*AERODYNAMIC NOISE, COVERINGS,  
THRUST AUGMENTATION, AERODYNAMIC SLOTS, ASPECT  
RATIO, NOISE POLLUTION, SUPPRESSION, ACOUSTIC  
ATTENUATION, MACH NUMBER, STAGNATION TEMPERATURE,  
VERTICAL TAKEOFF AIRCRAFT, SHORT TAKEOFF AIRCRAFT  
IDENTIFIERS: \*SLOT NOZZLES

(U)

(U)

THIS REPORT PRESENTS THE RESULTS OF A STUDY OF THE  
ACOUSTIC AND FLUID DYNAMIC CHARACTERISTICS OF A  
SHROUDED SLOT NOZZLE. EXPERIMENTS WERE CARRIED OUT  
ON A SLOT NOZZLE OF ASPECT RATIO 27 WITH AN EJECTOR  
SHROUD HAVING A CROSS SECTIONAL AREA OF FOUR TIMES  
THE PRIMARY NOZZLE AREA. PARAMETERS VARIED DURING  
THE TESTS WERE, SHROUD LENGTH, SHROUD DIVERGENCE  
RATIO, AND ACOUSTICAL IMPEDANCE OF THE SHROUD WALL.  
TESTS WERE CONDUCTED FOR PRIMARY FLOW MACH  
NUMBERS FROM 0.5 TO CHOKING AND STAGNATION  
TEMPERATURES FROM AMBIENT TO 1200 R. THE RESULTS  
OF THE STUDY SHOW THAT BOTH THE THRUST AND THE NOISE  
ATTENUATION CHARACTERISTICS OF THE EJECTOR SHROUD  
IMPROVE WITH INCREASING LENGTH. THRUST INCREASES OF  
NEAR 40% WERE OBTAINED FOR THE LONGEST SHROUD  
TESTED. A NOISE REDUCTION OF 13 DB WAS OBTAINED  
FOR THE LINED SHROUD WITH A NEAR CHOKED, HIGH  
TEMPERATURE PRIMARY JET. THE CORRESPONDING THRUST  
AUGMENTATION WAS APPROXIMATELY 20%. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A041 848 14/2 20/1 21/5  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

HIGH VELOCITY JET NOISE SOURCE LOCATION  
AND REDUCTION. TASK 1. ACTIVATION OF  
FACILITIES AND VALIDATION OF SOURCE LOCATION  
TECHNIQUES,

(U)

DESCRIPTIVE NOTE: FINAL REPT. AUG 73-MAR 76,  
FEB 77 671P SAVELL, C. T. ; STRINGAS, E.  
J. ;  
REPT. NO. R77AEG187  
CONTRACT: DOT-OS-30034  
MONITOR: FAA-RD 76-79-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO TASK 4, AD-A041  
849.

DESCRIPTORS: \*JET PLANE NOISE, \*ACOUSTIC  
MEASUREMENT, \*TEST FACILITIES, ACOUSTIC ATTENUATION,  
ACOUSTIC REFLECTION, MICROPHONES, LASER  
VELOCIMETERS, ANECHOIC CHAMBERS, JET ENGINES, TEST  
STANDS, SCALE MODELS, NOISE REDUCTION, WIND  
TUNNELS, AIRCRAFT ENGINE NOISE, HIGH VELOCITY  
IDENTIFIERS: J-79 ENGINES

(U)  
(U)

THIS REPORT SUMMARIZES THE RESULTS OF TASK 1 AS  
CONDUCTED UNDER THE SUBJECT PROGRAM. THE INTENT OF  
THIS 29-MONTH EFFORT WAS TO CHECK OUT CANDIDATE TEST  
FACILITIES AND NOISE SOURCE LOCATION TECHNIQUES TO  
ENSURE THAT THE BEST POSSIBLE JET NOISE DATA OVER THE  
FULL RANGE OF CONDITIONS (VELOCITIES RANGING FROM  
600 FPS TO 3000 FPS WITH THE BEST INSTRUMENTATIONS  
ARE OBTAINED. THE FACILITIES ACTIVATED AND  
VALIDATED INCLUDED: TWO ANECHOIC FACILITIES; THE  
UNIVERSITY OF SOUTHERN CALIFORNIA IN LOS  
ANGELES, CALIFORNIA, AND THE UNIVERSITY OF  
BRITISH COLUMBIA IN VANCOUVER, CANADA; TWO  
OUTDOOR SCALE-MODEL JET NOISE FACILITIES; THE  
GENERAL ELECTRIC JET EXHAUST NOISE  
OUTDOOR TEST STAND IN EVENDALE, OHIO, AND  
THE GENERAL ELECTRIC CORPORATE RESEARCH AND  
DEVELOPMENT CENTER HOT JET NOISE FACILITY  
AT SCHENECTADY, NEW YORK; ONE LARGE-SCALE  
ENGINE OUTDOOR TEST STAND; A SUPER SUPPRESSED J79  
ENGINE AT THE GENERAL ELECTRIC FACILITY AT  
EDWARDS AIR FORCE FLIGHT TEST CENTER,  
CALIFORNIA;

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A041 849 20/1 21/5  
GENERAL ELECTRIC CO CINCINNATI OHIO AIRCRAFT ENGINE  
GROUP

HIGH VELOCITY JET NOISE SOURCE LOCATION  
AND REDUCTION. TASK 4. DEVELOPMENT/  
EVALUATION OF TECHNIQUES FOR 'INFLIGHT'  
INVESTIGATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
FEB 77 568P CLAPPER, W. S. ; STRINGAS, E.  
J. ;  
REPT. NO. R77AEG189  
CONTRACT: DOT-OS-30034  
MONITOR: FAA-RD 76-79-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO TASK 1, AD-A041  
848.

DESCRIPTORS: \*JET PLANE NOISE, \*ACOUSTIC  
MEASUREMENT, INFLIGHT, FLIGHT SIMULATION, WIND  
TUNNELS, HIGH VELOCITY, AIRCRAFT ENGINE NOISE,  
ACOUSTIC SIGNATURES, LOCOMOTIVES, JET AIRCRAFT,  
ROCKET SLEDS

(U)

IDENTIFIERS: F-106 AIRCRAFT, LEAR JET AIRCRAFT,  
AEROTRAIN VEHICLES

(U)

THIS REPORT PRESENTS THE RESULTS OF TASK 4 AS  
CONDUCTED UNDER THE SUBJECT PROGRAM OVER A PERIOD OF  
30 MONTHS. TASK 4 WAS FORMULATED TO IDENTIFY AND  
EVALUATE SEVERAL INFLIGHT SIMULATION TECHNIQUES,  
SELECT THE MOST PROMISING TECHNIQUE FOR DEMONSTRATION  
AND VALIDATION, AND EMPLOY THAT TECHNIQUE IN TESTING  
UNDER TASK 5 OF THE PROGRAM. TECHNIQUES EVALUATED  
INCLUDE CLOSED-CIRCUIT WIND TUNNELS, FREE JETS,  
ROCKET SLEDS, AND HIGH SPEED TRAINS. PERTINENT  
RESULTS FROM THE EVALUATION PHASE AND RATIONALE WHICH  
LED TO SELECTION OF THE FREE JET SIMULATION TECHNIQUE  
ARE DISCUSSED, INCLUDING ADVANTAGES AND  
DISADVANTAGES. THE RESULTS OF A THEORETICAL STUDY  
AIMED AT RELATING THE NOISE SIGNATURE OBTAINED IN A  
FREE JET FACILITY FOR SIMULATION OF FORWARD FLIGHT  
EFFECTS ON JET NOISE WITH THE NOISE SIGNATURE IN TRUE  
FLIGHT ARE PRESENTED. TRANSFORMATION IS CARRIED OUT  
BY EXTRACTING 'STATIC DIRECTIVITY' OF THE NOISE AFTER  
CORRECTING FOR REFRACTION, TURBULENT SCATTERING, AND  
ABSORPTION EFFECTS, AND THEN EMPLOYING A SUITABLE  
MULTIPOLE SOURCE DECOMPOSITION TO EVALUATE THE PROPER  
DYNAMIC EFFECT.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-A042 076 20/1  
BOLT BERANEK AND NEWMAN INC CANOGA PARK CALIF

AIRCRAFT SIDELINE NOISE: A TECHNICAL  
REVIEW AND ANALYSIS OF CONTEMPORARY DATA. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 77 47P WALKER, DAVID Q. ;  
REPT. NO. BBN-3291  
CONTRACT: F33615-76-C-0507  
PROJ: 7231  
TASK: 04  
MONITOR: AMRL TR-76-115

UNCLASSIFIED REPORT

DESCRIPTORS: \*AIRCRAFT NOISE, \*AIRPORTS, PLANNING,  
COMPUTER PROGRAMS, ACOUSTIC ATTENUATION,  
MATHEMATICAL MODELS, SOUND TRANSMISSION, SIDES,  
PREDICTIONS (U)  
IDENTIFIERS: WUAMRL72310428, PE62202F (U)

THIS REPORT PRESENTS A REVIEW AND ANALYSIS OF  
RECENT AIRCRAFT FLYOVER DATA WHERE THE AIRCRAFT IS AT  
A LOW ANGLE OF ELEVATION RELATIVE TO THE OBSERVER.  
EXCESS ATTENUATION FACTORS (ATTENUATION IN  
ADDITION TO NORMAL SPHERICAL DIVERGENCE AND  
ATMOSPHERIC ABSORPTION LOSSES), EVALUATED FOR A  
RANGE OF AIRCRAFT TYPES, WERE FOUND TO VARY BETWEEN  
AIRCRAFT AND COULD BE GENERALLY CHARACTERIZED AS A  
FUNCTION OF AIRCRAFT ANGLE OF ELEVATION ONLY.  
FUSELAGE SHEIDLING OR INSTALLATION EFFECTS COULD  
NOT BE POSITIVELY IDENTIFIED ALTHOUGH THEIR PRESENCE  
IS SUGGESTED BY THE DIFFERING EXCESS ATTENUATION  
CHARACTERISTICS OF EACH AIRCRAFT TYPE. LACK OF  
DETAIL IN THE DATA AVAILABLE FOR REVIEW PRECLUDED THE  
IDENTIFICATION OF ANY PROPAGATION LOSSES DUE TO  
TURBULENT SCATTERING OF SOUND IN THE ATMOSPHERE.  
THE RESULTS OF THE STUDY SUGGEST THAT CURRENTLY  
APPLIED PREDICTIVE MODELS FOR SIDELINE NOISE TEND TO  
OVERESTIMATE NOISE LEVELS - PARTICULARLY FOR 3 AND 4  
ENGINE AIRCRAFT. AN ALTERNATIVE APPROACH TO  
SIDELINE NOISE PREDICTION IS SUGGESTED AND  
RECOMMENDATIONS ARE MADE TO ENCOURAGE TECHNICAL  
DEVELOPMENT IN THIS UNCERTAIN AREA OF AIRCRAFT NOISE  
PREDICTION. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOM09

AD-B002 067 20/1 17/1 6/16  
WYLE LABS HAMPTON VA

CORRELATION OF ACTUAL AND ANALYTICAL  
HELICOPTER AURAL DETECTION CRITERIA. VOLUME  
I.

(U)

DESCRIPTIVE NOTE: FINAL CONTRACTOR REPT. MAR 73-DEC  
74,

JAN 75 135P ABRAHAMSON, A LOUIS ;  
CONTRACT: DAAJ02-73-C-0057  
PROJ: DA-1-F-126205-AH-88  
TASK: 1-F-126205-AH-8801  
MONITOR: USAAMRDL TR-14-102A

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIRCRAFT NOISE, HELICOPTERS),  
(\*AIRCRAFT DETECTION, \*AUDITORY PERCEPTION),  
(\*SOUND TRANSMISSION, AIRCRAFT NOISE), HEARING,  
FACTOR ANALYSIS, RANGE(DISTANCE), ATTENTION,  
ARMY PERSONNEL, TERRAIN, MASKING, ATTENUATION,  
AMBIENT NOISE, FLIGHT PATHS, METEOROLOGICAL DATA,  
EXPERIMENTAL DATA, DATA REDUCTION, STATISTICAL  
ANALYSIS, MATHEMATICAL MODELS, VALIDATION, FIELD  
TESTS, CORRELATION TECHNIQUES, AERODYNAMIC NOISE,  
JET ENGINE NOISE, GEAR NOISE, WIND, LOW  
ALTITUDE, POWER SPECTRA, TACTICAL AIR SUPPORT,  
ARMY AIRCRAFT

(U)

IDENTIFIERS: \*HELICOPTER NOISE

(U)

THIS STUDY WAS CONCEIVED AS A BASIC EXPERIMENT FOR  
MEASUREMENT OF HELICOPTER AURAL DETECTABILITY, AND  
FOR ASSESSMENT OF THE ACCURACY OF A MODEL DEVELOPED  
BY OLLERHEAD FOR COMPUTING AURAL DETECTION  
DISTANCES. THE EXPERIMENT WAS CONDUCTED OVER A  
PERIOD OF TWO WEEKS AT NASA WALLOPS STATION  
UTILIZING 25 ARMY PERSONNEL AS LISTENING SUBJECTS,  
AND THREE DIFFERENT TYPES OF HELICOPTERS CURRENTLY IN  
ARMY SERVICE. THE EFFECT OF THE FOLLOWING  
PARAMETERS WAS INVESTIGATED: AMBIENT NOISE LEVEL,  
FLIGHT PROFILE, LISTENER ATTENTIVENESS, ATMOSPHERIC  
CONDITIONS. REDUCTION OF DATA WAS EXECUTED USING A  
NEW PROCEDURE FOR SIMULATING AURAL FREQUENCY  
DECOMPOSITION OF SOUND. CORRELATION WITH  
OLLERHEAD'S MODEL CONFIRMED HIS LABORATORY-DERIVED  
DETECTABILITY CRITERION AS A MEDIAN CASE FOR  
INDIVIDUAL RESPONSE AND ALLOWED EXTENSION OF THE  
CRITERION IN THE CONTEXT OF A MEASURED STATISTICAL  
DISTRIBUTION.

(U)



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ADVISORY GROUP FOR AERONAUTICAL  
RESEARCH AND DEVELOPMENT PARIS  
(FRANCE)

AGARD-433

NOISE AND ITS EFFECT ON  
AIRCRAFT OPERATION.  
AD- 427 666

ADVISORY GROUP FOR AEROSPACE RESEARCH  
AND DEVELOPMENT PARIS (FRANCE)

AGARD-AR-66

TECHNICAL EVALUATION REPORT ON  
FLUID DYNAMICS PANEL SPECIALISTS  
MEETING ON NOISE MECHANISMS.  
AD- 776 655

AGARD-LS-77

AIRCRAFT NOISE GENERATION,  
EMISSION AND REDUCTION.  
AD-A012 090

AERONAUTICAL SYSTEMS DIV WRIGHT-  
PATTERSON AFB OHIO

GUIDELINES FOR ESTABLISHING  
INTERIOR NOISE LEVEL CRITERIA FOR  
AIR FORCE AIRCRAFT.  
(SEG-TR-67-57)

AD- 670 165

ASD-TR60 220

A STUDY OF THE CHARACTERISTICS  
OF MODERN ENGINE NOISE AND THE  
RESPONSE CHARACTERISTICS OF  
STRUCTURES

AD- 272 210

ASD-TR60 689 V1

COMMUNITY REACTIONS TO AIR  
FORCE NOISE. PART I. BASIC CONCEPTS  
AND PRELIMINARY METHODOLOGY

AD- 267 052

ASD-TR60 689 V2

COMMUNITY REACTIONS TO AIR  
FORCE NOISE. PART II. DATA ON  
COMMUNITY STUDIES AND THEIR  
INTERPRETATION

AD- 267 057

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ASD-TR61 611  
NOISE FROM AIRCRAFT OPERATIONS  
AD- 278 625

AEROSPACE MEDICAL RESEARCH LAB WRIGHT-  
PATTERSON AFB OHIO

AMRL-MEMO-N-22

ACOUSTICAL EVALUATION OF TYPE  
11 AIRCRAFT GROUND RUNUP NOISE  
SUPPRESSOR AT TRUAX AIR FORCE BASE,  
WISCONSIN

AD- 294 189

AMRL-TR-50-VOL-33

USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK. VOLUME 33. C-131B  
IN-FLIGHT CREW NOISE.

AD-A029 607

AMRL-TR-68-176

MEASUREMENT AND ANALYSIS OF  
BIOACOUSTIC ENVIRONMENTS ABOARD AC-  
119G AND AC-130A GUNSHIPS.

AD- 699 593

AMRL-TR-70-53

ACOUSTIC ENVIRONMENTS PRODUCED  
BY THE C-5A AIRCRAFT DURING GROUND  
OPERATIONS.

AD- 716 814

AMRL-TR-72-2

NOISE AND SPEECH LEVELS  
ASSOCIATED WITH THE F-111A PREP  
AREA, MCCLELLAN AFB.

AD- 744 828

AMRL-TR-73-105

COMMUNITY NOISE EXPOSURE  
RESULTING FROM AIRCRAFT OPERATIONS:  
APPLICATION GUIDE FOR PREDICTIVE  
PROCEDURE.

AD-A004 818

AMRL-TR-73-107

COMMUNITY NOISE EXPOSURE  
RESULTING FROM AIRCRAFT OPERATIONS:  
ACQUISITION AND ANALYSIS OF  
AIRCRAFT NOISE AND PERFORMANCE

DATA.

AD-A017 741

AMRL-TR-73-108

COMMUNITY NOISE EXPOSURE  
RESULTING FROM AIRCRAFT OPERATIONS:  
COMPUTER PROGRAM OPERATOR'S MANUAL.  
AD- 785 360

AMRL-TR-73-108-APP

COMMUNITY NOISE EXPOSURE  
RESULTING FROM AIRCRAFT OPERATIONS.  
APPENDIX: NOISEMAP PROGRAM  
OPERATOR'S MANUAL.

AD-A022 911

AMRL-TR-73-109

COMMUNITY NOISE EXPOSURE  
RESULTING FROM AIRCRAFT OPERATIONS:  
COMPUTER PROGRAM DESCRIPTION.

AD-A004 821

AMRL-TR-75-40

DEVELOPMENT OF A UNIFORM  
APPROACH TO CHARACTERIZE NOISE  
IMPACT ON PEOPLE.  
AD-A036 224

AMRL-TR-75-50-VOL-1

USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK: VOLUME 1.  
ORGANIZATION, CONTENT AND  
APPLICATION.

AD-A031 865

AMRL-TR-75-50-VOL-31

USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK. VOLUME 31. B-52H  
IN-FLIGHT CREW NOISE.

AD-A029 605

AMRL-TR-75-50-VOL-32

USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK. VOLUME 32. KC-135A  
IN-FLIGHT CREW NOISE.

AD-A029 606

AMRL-TR-75-50-VOL-34

USAF BIOENVIRONMENTAL NOISE  
DATA HANDBOOK. VOLUME 34. VC-118A  
IN-FLIGHT CREW/PASSENGER NOISE.

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AD-A029 608  
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 AMRL-TR-75-50-VOL-35  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 35. T-398  
 IN-FLIGHT CREW/PASSENGER NOISE.  
 AD-A029 609  
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 AMRL-TR-75-50-VOL-37  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 37. F-40 IN-  
 FLIGHT CREW NOISE.  
 AD-A029 610  
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 AMRL-TR-75-50-VOL-42  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 42. EC-135H  
 IN-FLIGHT CREW NOISE.  
 AD-A029 613  
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 AMRL-TR-75-50-VOL-45  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 45. F-111E  
 IN-FLIGHT CREW NOISE.  
 AD-A029 614  
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 AMRL-TR-75-50-VOL-46  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 46. O-2A IN-  
 FLIGHT CREW NOISE.  
 AD-A029 615  
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 AMRL-TR-75-50-VOL-47  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 47. O-2B IN-  
 FLIGHT CREW NOISE.  
 AD-A029 616  
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 AMRL-TR-75-50-VOL-48  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 48. T-33A  
 IN-FLIGHT CREW NOISE.  
 AD-A029 617  
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 AMRL-TR-75-50-VOL-49  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 49. T-34A  
 IN-FLIGHT CREW NOISE.  
 AD-A029 618  
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 AMRL-TR-75-50-VOL-50

USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 50. HH-43B IN-  
 FLIGHT CREW NOISE.  
 AD-A029 619  
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 AMRL-TR-75-50-VOL-51  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 51. HH-53C  
 IN-FLIGHT CREW NOISE.  
 AD-A029 620  
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 AMRL-TR-75-50-VOL-52  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 52. A-1E IN-  
 FLIGHT CREW NOISE.  
 AD-A029 621  
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 AMRL-TR-75-50-VOL-53  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 53. AC-119G  
 IN-FLIGHT CREW NOISE.  
 AD-A029 622  
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 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 54. C-123K  
 IN-FLIGHT CREW NOISE.  
 AD-A029 623  
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 AMRL-TR-75-50-VOL-55  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 55. AC-130A  
 IN-FLIGHT CREW NOISE.  
 AD-A029 624  
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 AMRL-TR-75-50-VOL-56  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 56. HC-130M  
 IN-FLIGHT CREW NOISE.  
 AD-A029 625  
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 AMRL-TR-75-50-VOL-57  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 57. T-28D-5  
 IN-FLIGHT CREW NOISE.  
 AD-A029 626  
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 AMRL-TR-75-50-VOL-58  
 USAF BIOENVIRONMENTAL NOISE  
 DATA HANDBOOK. VOLUME 58. U-10B IN-  
 FLIGHT CREW NOISE.

AD-A033 641  
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 AMRL-TR-75-50-VOL-59  
 USAF BIOENVIRONMENTAL NOISE  
 DATA. VOLUME 59. QU-22B IN-FLIGHT  
 CREW NOISE.  
 AD-A033 642  
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 USAF BIOENVIRONMENTAL NOISE  
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